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C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 25 January 10, 1933 No. 1
Personnel (Dec. 11-Jan.10) and Field Station (Dec. 1-31) Issue

PERSONNEL ITEMS

Mr. C. O. Johnston is in Washington from his headquarters at Manhattan, Kans. He will spend two weeks conferring with personnel of the Division on cooperative leaf-rust problems and in preparing manuscripts.

MANUSCRIPTS SUBMITTED

72. Correlated Inheritance in a Triangular Wheat Cross of Reaction to Diseases and Botanical Characters. E. R. Ausemus. Dec. 14. Jour. Agr. Research.

73. Inheritance of Seed Color in Crosses of Brown- and White-Seeded Sorghums. John B. Sieglinger. Dec. 17. Jour. Agr. Research.

74. Oat Varieties Highly Resistant to Crown Rust and Their Probable Agronomic Value. T. R. Stanton and H. C. Murphy. Dec. 21. Jour. Amer. Soc. Agron.

75. A Readily Removable Label Holder for Nursery and Advanced Plats. (Note) D. C. Tingey and R. W. Woodward. Dec. 16. Jour. Amer. Soc. Agron.

76. The Adaptation of Sugar Cane Varieties to Soil Types. J. A. Faris. Dec. 23. Proc. Assoc. Sugar Technol. Cuba.

77. Improved Modification in the Columbia Drill. (Note) R. W. Woodward and D. C. Tingey. Dec. 20. Jour. Amer. Soc. Agron.

RECENT PUBLICATIONS

Experiments in Wheat Production on the Dry Lands of Oregon, Washington, and Utah. David E. Stephens, H. M. Wanser, and Aaron F. Bracken. Tech. Bul.329, 68 p., 31 figs. November, 1932. (Cooperation between the Division of Cereal Crops and Diseases and the Oregon, Washington and Utah agricultural experiment stations.)

An Experimental Study of the Rod-row Method with Spring Wheat. H. K. Hayes, H. K. Wilson, and E. R. Ausemus. Jour. Amer. Soc. Agron. 24(12): 950-960. December, 1932. (Cooperation between the Division of Cereal Crops and Diseases and the Minnesota Agricultural Experiment Station.)

Registration of Improved Wheat Varieties, VII. J. Allen Clark. Jour. Amer. Soc. Agron. 24(12): 975-978. December, 1932.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

ARKANSAS

Rice Branch Experiment Station, Stuttgart (Rice Production and Improvement, C. R. Adair) (Dec. 9)

Yields of rice grown in triplicate 1/20th-acre plots at the Rice Branch Experiment Station, Stuttgart, Ark.

Variety	C.I.No.	Average yield per acre 1932 Bu.	1932 Lbs.	1928-1932, inc. Bu.	1928-1932, inc. Lbs.
Caloro	1561-1	62.1	2795	66.3	2984
Early Prolific	5883	54.9	2471	64.8	2916
Early Blue Rose(check)	--	55.4	2493	64.7 1/	2912
Edith	2127	53.3	2399	60.2	2709
Supreme Blue Rose	1962	22.6	1017	56.4	2538
Storm Proof	7705	31.2	1404	55.4	2493
Lady Wright	5451	32.4	1458	52.2	2349

Variety	C.I.No.	Average yield per acre 1932 Bu.	Lbs.	1928-32, inc. Bu.	Lbs.
Shoemed	3625	49.7	2237	51.5 1/	2318
Fortuna	1344	53.7	2417	49.6	2232
Mortgage Lifter	5550	20.0	900	49.4	2223
Acadia	1988	32.4	1458	48.8	2196
Colusa	1600	41.1	1850	47.7	2147
Honduras	1643	15.0	675	47.2	2124
Delitus	1206	34.2	1539	34.2	1539
Iola	4559	12.8	576	25.6 1/	1152
Rexoro	1779	3.3	149	21.7 1/	977

1/ Average 1931 and 1932.

OHIO

Agricultural Experiment Station, Wooster (Corn Investigations, G. H. Stringfield) (Jan. 3) The 1932 season in general was considerably less favorable for corn than that of 1931. Corn-borer survival undoubtedly was much lessened by the drought. The yields of outlying experiments in west-central Ohio were greatly reduced. On the other hand, favorable growing conditions prevailed at Columbus, Wooster, and several other stations.

The Ohio Corn Yield Test, patterned largely after the Iowa Corn Yield Test, was started on a small scale with one test held in southwestern Ohio and one in northwestern Ohio. Results will be reported at the annual Farmers' Week in February at the State University.

Plans are going forward for cooperative farmer tests in which selected growers will be given single-cross seed in 1933 from which to make their own double crosses. Comparisons of the double cross with their own local corn will be made in 1934 under supervision of the Extension agronomists.

Nearly all moisture samples from 1932 experiments have been shelled and data are being summarized.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(Dec. 31) The precipitation in December totaled 5.60 inches, which is 2.97 inches above normal and the heaviest rainfall ever recorded for December at this Substation. Three inches of snow fell on the 16th and remained on the ground for several days. This is the heaviest snowfall since 1924. While the snow was on the ground a new low temperature for December was set when 5° was recorded. A temperature of 32° or below was recorded on 17 days during the month, making it one of the coldest Decembers on record. The maximum temperature was 80°.

The moisture broke the drought of several months. Small grain that had germinated was badly in need of moisture and a large part of the grain had never emerged. Since the rains germination was started and a few plants are emerging. The grain suffered no injury from the low temperature as it was protected by snow.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(Dec. 31) The minimum temperature in December was -10° on the 12th; maximum, 73° on the 1st and 2nd; precipitation, 1.25 inches, of which 0.47 of an inch was in the form of snow.

Yield of grain sorghums in the date-varietal experiments conducted at the Southern Great Plains Field Station, Woodward, Okla., 1932

Variety	C.I.No.	Seeding dates May 25	June 9	June 23
		Yield 1/ (Bu. 2/ per acre)		
Dwarf milo	332	26.8	39.2	38.9
Beaver milo	871	20.0	23.8	33.3
Wheatland milo	918	20.0	20.6	19.2
Fargo milo	809	16.8	32.4	34.9
Feterita	182	22.5	19.2	30.1
Spur feterita	623	16.8	22.1	33.0
Dwarf hegari	750	23.6	27.8	26.5
Ajax	968	25.9	30.9	37.0
Chiltex	874	23.2	27.6	35.4
Early Red kafir	866	21.9	26.3	34.9
Pink kafir	432	20.6	22.1	29.9
Dawn kafir	340	23.6	23.6	32.4
Sunrise kafir	472	25.7	27.8	38.1
Reed kafir	628	34.1	38.3	40.2
Sharon kafir	813	27.6	31.8	44.0
Standard kafir	71	18.3	40.4	42.1
Bishop kafir	814	19.2	41.7	46.7
Darso	615	20.0	25.3	22.1
Grohoma	920	13.9	35.4	38.3

1/ Each yield figure is the average of two guarded plots, except that for Dwarf milo which is the average of three plots.
2/ Calculated at 56 pounds per bu.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(Dec. 31) Winter wheat has made little top growth in December, but the benefit from the moisture which fell is becoming apparent in growth of secondary roots. Fortunately, the wheat was covered with about three inches of snow at the time of the subzero temperatures and there probably is no killing in varieties in the varietal experiments. Some killing occurred in hybrid material in the winter-wheat nursery, in the fall-sown barley nursery, and in the uniform oat winter hardiness nursery.

KANSAS

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson) (Jan. 4) The official December wheat report, estimating the production at 57 per cent of normal, the lowest on record, confirms the opinion of private observers concerning the extremely poor crop prospects. Western counties, where much of the wheat never germinated, are hardest hit. The wheat that is up is shallow rooted and lacks vigor. This condition in varying degrees is said to obtain through western Nebraska, Kansas, Oklahoma, eastern Colorado, and the Texas Panhandle.

The past fall at Manhattan has been exceptionally dry. The unusual difficulty of having pop corn in the field become too dry for best popping condition has been experienced by some growers. One field tested only 11.4 per cent moisture when it was being husked in mid-November. However, the dry open weather was ideal for getting farm work done and preparing for winter.

The temperature in December varied from 68° on the 5th to -14° on the 16th. The precipitation totaled 1.32 inches. The total precipitation for the year was 23.93 inches, or 7.20 inches below normal, making 1932 the driest year since 1910.

SOUTH DAKOTA

Belle Fourche Field Station, Newell (Beyer Aune) (Dec. 19) The yields of seven varieties of flax and safflower sown May 18, 1932, on land cropped to sweet clover and pastured with sheep in 1931 (irrigated once July 12, ripe August 19) are shown in the following table:

Variety	C. I. No.	Yield (Bu. per A.)
Linota	244	13.1
Redwing	320	11.8
Bison	389	13.2
Ric (Argentine)	280	13.1
Primost	25	12.9
Buda	326	12.1
Fiber flax	-	8.5
Safflower 1/	-	5.7

1/ Ripe September 19, yield calculated at 40 pounds a bushel.

NORTH DAKOTA

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (Dec. 31) The weather of last half of December was comparatively mild. The total snowfall in December was 2.2 inches, amounting to 0.27 inch of precipitation. It is reported that highways are open to traffic all over the State.

The minimum temperature for the month was -27°. This occurred early in the month when the ground was nearly bare. Winter wheat is now covered with about two inches of snow and probably has not been greatly injured by the cold weather.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(Jan. 3) The light covering of snow on the uniform winter-hardiness nursery remained almost unchanged during December. Only 0.26 of an inch of precipitation, less than one-half the normal, fell duringthe month. The weather in first half of the month was very cold; the minimum temperature was -25° on the 11th. Temperatures were comparatively moderate during the last half of December.

Heads from an awn-clipping experiment have been threshed and more data have been tabulated for the annual report, the text of which is under way.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (Jan. 1) During the storm between December 6 and 14, about six inches of snow fell and temperatures as low as -28° were recorded. Recent windstorms have whipped all of the snow off fallow fields seeded to winter wheat.

Temperatures; Maximum, 46° on the 1st; minimum, -28° on the 8th and 10th. Precipitation: 0.77 of an inch.

IDAHO

Agricultural Experiment Station, Moscow (Wheat Improvement, V. H. Florell) (Nov. 12) Yields of oats grown in triplicate 46.6th-acre plots at the Agricultural Experiment Station, Moscow, Idaho, 1932

Variety	C.I.No.	Yield (Bu.per A.)	Variety	C.I.No.	Yield (Bu.per A.)
Banner	1191	106.3	Swedish Select	1627	90.7
Wasa	2273	106.0	Corriente	2148	86.3
Nova	2274	104.4	Garton	--	76.0

Variety	C.I.No.	Yield (Bu.per A.)	Variety	C.I.No.	Yield (Bu.per A.)
Victory	1654	104.1	Markton	2053	73.5
Abundance	1970	103.1	Iowar	847	71.6
Eagle	--	101.2	Idamine	1834	69.6
Golden Rain	1718	100.9	Kanota	839	55.8
Silver	2269	100.2	Richland	787	55.6
Star	2753	99.4	Laurel (hull-less)	2231	28.1 1/
Crown	2022	99.0			

1/ Calculated at 50 pounds per bushel.

Yields of barley grown in triplicate 46.6th-acre plots at the Agricultural Experiment Station, Moscow, Idaho, 1932

Variety	C.I.No.	Yield (Bu.per A.)	Variety	C.I.No.	Yield (Bu.per A.)
Peruvian	935	43.4	Baker	975	29.4
White Smyrna	910	41.3	Velvet	4252	27.2
Hannchen (229)	4841	40.3	Han River	206	27.2
Ottawa No. 7	--	39.5	Glabron	4577	26.9
Ace	1853	37.9	Colsess	2792	26.4
Charlottetown 80	2732	32.7	Baker	975	25.4
Winter Club	488	31.3	Ezond	5064	25.2
Union Beardless	--	31.1	Spartan	5027	24.8
Trebi	936	30.1	Faust	4579	21.6 1/

1/ Calculated at 60 pounds per bushel.

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin) (Jan. 2) There was more than a week of subzero weather during the first part of December. The minimum temperature at the Station was -15°. There was no protective snow covering, so fall-sown wheat was badly injured. Nonhardy varieties, such as Federation and several hybrid strains with Federation as one parent, were killed. It is reported that Turkey wheat was badly injured in some sections of the Columbia Basin, but the injury was not great here.

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)(Dec.14) The weather in November was very favorable for winter wheat in eastern Oregon. No low temperatures were recorded during the month and the precipitation was above normal. The weather of the first week in December also was mild, but since the 8th there has been some real cold weather. On several nights temperatures were below zero, the lowest being 6 below on the 10th. This cold weather is unusual in that it was not preceded or accompanied by any precipitation. The sky has been clear and there has been practically no wind movement except on the first cold day when a strong gale blew from the east.

There is no snow covering, and much winterkilling of wheat doubtless has occurred in eastern Oregon. In some localities temperatures of 20° below zero have been reported. It has already been decided that on the Station many of the less hardy varieties are completely killed. Turkey wheat is badly injured but may not have to be resown if the cold weather does not continue too long and moisture conditions are favorable when thawing occurs.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (Jan. 3) Weather conditions in December have been extremely variable. The warm, dry autumn extended until December 9, when a light snowfall was followed by eight days of extremely cold weather. A minimum temperature of -24° F. was recorded at the Station on December 12, while readings of from -35° to -40° were reported in the valley.

The winter wheat was protected by 8 to 12 inches of light snow. The precipitation for the month was 1.15 inches, making a total of 17.47 inches for the year.

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C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
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Vol. 25 February 10, 1933 No. 2
Personnel (Jan. 11-Feb. 10) and Field Station (Jan. 1-31) Issue

PERSONNEL ITEMS

Mr. C. R. Adair, stationed at the Rice Branch Experiment Station, Stuttgart, Ark., arrived in Washington on February 8. He will spend about three weeks conferring with personnel of the Division regarding cooperative rice experiments and preparing his annual report.

Messrs. H. A. McCall and J. W. Jones attended a conference at the Rice Experiment Station, Crowley, La., held for the purpose of revising the cooperative rice-improvement program being carried in Louisiana. Director C. T. Dowell, Mr. J. P. Gray, and Mr. H. B. Sturgis of the Louisiana station, and Supt. J. Mitchell Jenkins and Dr. A. L. Smith of Crowley also took part in this conference. Mr. W. A. Douglas, of the Bureau of Entomology, with headquarters at the Crowley station, was likewise present. The particular occasion for the conference was the necessity for determining the relative emphasis to be placed on different lines of work incident to the utilization of the new tract of land purchased some time ago by the Louisiana station for rice experiments. After a general discussion and a determination of broad policies to be followed, details for working out the program were delegated to Messrs. Jones and Jenkins, with Messrs. Gray and Sturgis acting in an advisory capacity.

Mr. F. D. Richey left Washington on February 7 to visit LaFayette, Ind., Baton Rouge, La., and Knoxville, Tenn., in the interests of cooperative corn investigations.

VISITORS

Dr. N. I. Vavilov, Director, Institute of Applied Botany, Leningrad, U. S. S. R., was a Division visitor during the last week of January. He was accompanied by Mr. S. M. Saenko, Consulting Agronomist, Amtorg Trading Corporation, New York, N. Y.

MANUSCRIPTS SUBMITTED

1. Factors Affecting Experimental Error in Field Plots with Corn. A. A. Bryan. Feb. 3. Iowa Agr. Expt. Sta. Bul.

2. Barley Varieties of California. G. A. Wiebe. Feb. 7. Jour. Inst. Brewing. [London.]

3. Irregularities in the Inheritance of the Hairy-Neck Character Transposed from Secale to Triticum. J. W. Taylor. Feb. 8. Jour. Agr. Research.

4. Inheritance of Characters in Rice. J. W. Jones. Feb. 9. Jour. Agr. Research.

RECENT PUBLICATIONS

Effect of Reduced Oxygen Pressure on Rice Germination. Jenkin W. Jones. Jour. Amer. Soc. Agron. 25(1): 69-81, 1 fig. January, 1933.

Heterosis: Specific Not General in Nature. F. A. Coffman. Science n. s. 77(1987): 114-115. Jan. 27, 1933.

The following manuscripts prepared by members of the Division for the Yearbook of Agriculture, 1933, have been approved by the Chief of the Bureau:

Nearly 300 Varieties of Wheat Grown on Farms of the U. S. S. C. Salmon.

Wheat's Rotation Use Is Largely Determined by Crop Competition. J. S. Cole and S. C. Salmon.

Wheat Attacked by Numerous Destructive Diseases. H. B. Humphrey.

(These three articles will form part of a symposium on wheat.)

Oat Varieties Have Regional Adaptation. T. R. Stanton.

Grain Sorghums Are Highly Drought Resistant; Many Varieties Are Grown. J. H. Martin.

Corn Hybrids Are Promising But Seed Supply is Limited and Cost Is High. F. D. Richey.

Barley Acreage Is Increasing Because of Crop Feed Value. H. V. Harlan. (These four articles will form part of a symposium on feed grains.)

The following abstracts relating to the work of the Division of Cereal Crops and Diseases and which were presented at the Twenty-Fourth Annual Meeting of the American Phytopathological Society, Atlantic City, N. J., December 28 to 30, 1932, appear in Phytopathology, vol. 23, no. 1. January, 1933.

Heterothallism in Puccinia graminis, P. coronata, and Melampsora lini. Ruth F. Allen. (Cooperation between the Division of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

Nature of Resistance of Corn to Seedling Blight. James G. Dickson, Karl P. Link, and A. D. Dickson. (Cooperation between the Division of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

Disease-Resistant Wheats Recently Introduced from Russia. James G. Dickson and R. G. Shands. (Cooperation between the Division of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

Basal Glume Rot of Barley. Charlotte Elliott and A. G. Johnson.

Influence of Soil Moisture and Soil Temperature on Infection of Wheat by Urocystis tritici. J. A. Faris.

Bacterial Leaf Blight of Dent Corn. J. R. Holbert, Charlotte Elliott, and Benjamin Koehler. (Cooperation between the Division of Cereal Crops and Diseases and the Illinois Agricultural Experiment Station and Funk Bros. Seed Co.)

Bound Water in Leaf Tissues of Heat-Resistant and Heat-Susceptible Inbred Strains of Yellow Dent Corn. J. R. Holbert and B. C. Frye. (Cooperation between the Division of Cereal Crops and Diseases and the Illinois Agricultural Experiment Station and Funk Bros. Seed Co.)

Differences in Size and Shape of Smut Balls of Two Physiologic Forms of Tilletia tritici. C. S. Holton. (Cooperation between the Division of Cereal Crops and Diseases and the Washington and Oregon agricultural experiment stations.)

Inheritance of Chlamydospore Characteristics in Oat-Smut Fungi. C. S. Holton. (Cooperation between the Division of Cereal Crops and Diseases and the Washington Agricultural Experiment Station.)

Effect of Leaf-Rust Infection on Water Economy and Growth of Two Wheat Varieties. C. O. Johnston and E. C. Miller. (Cooperation between the Division of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.)

The Genetics of Sphacelotheca sorghi and S. cruenta. H. A. Rodenhiser.

Pathogenicity of Certain Hybrids of Covered and Loose Smuts of sorghum. H. A. Rodenhiser and B. F. Barnes. (Cooperation between the Division of Cereal Crops and Diseases and the Division of Dry Land Agriculture, Bureau of Plant Industry.)

Association of Cercosporella Foot Rot with a Specific Ecological Area. Roderick Sprague. (Cooperation between the Division of Cereal Crops and Diseases and the Oregon and Washington agricultural experiment stations.)

Comparative Studies of Two Loose Smuts of Barley. V. F. Tapke. (Title only.)

Leptosphaeria salvinii, the Ascigerous Stage of Sclerotium oryzae. E. C. Tullis. (Cooperation between the Division of Cereal Crops and Diseases and the Arkansas, Louisiana, and Texas agricultural experiment stations.)

ANNUAL REPORT OF PUBLICATIONS AND MANUSCRIPTS DIVISION OF CEREAL CROPS AND DISEASES Calendar Year 1932

In the calendar year 1932, 85 articles, papers, and abstracts were published in the various series of Department publications, in publications of cooperating State agricultural organizations, and in private journals. In the same year 94 manuscripts were submitted for publication. There remain unpublished as of December 31, 1932, 67 manuscripts submitted in 1932 and 6 submitted in 1931.

GENERAL OR MISCELLANEOUS

Jodon, N. E. Modifications in the Columbia Drill for Seeding Oats and Barley. (Note) Jour. Amer.Soc. Agron. 24(4): 328-329. April, 1932.

_____ Cereal Variety Experiments at North Platte. Nebr. Agr. Expt. Sta. Bul. 272, 35 p. June, 1932. (Cooperation between the Division of Cereal Crops and Diseases and the Nebraska Agricultural Experiment Station.)

Parker, John H., and R. H Painter. Insect Resistance in Crop Plants. (Abs.) Sixth Internatl. Congr. Genetics (Ithaca) Proc. v. 2, p. 150-152. [1932.] ("The plant breeding phases of these investigations are partly supported by and in cooperation [between] the Division of Cereal Crops and Diseases ....[and the Kansas Agricultural Experiment Station]")

Sprague, Roderick. Notes on Phyllosticta rabiei on chick peas, II. (Phytopathological Notes) Phytopathology 22(9): 786-787. September, 1932.

AGRONOMIC SUBJECTS

Barley

Pope, Merritt N. The Growth Curve in Barley. Jour. Agr. Research 44(4): 323-341, figs. 1-10. February 15, 1932.

_____ Catalase Activity in Relation to the Growth Curve in Barley. Jour. Agr. Research 44(4): 343-355, figs. 1-7. February 15, 1932.

Corn

Arnold, Lloyd A., and Merle T. Jenkins. The Relative Variability of Corn Crosses and Varieties. Jour. Amer. Soc. Agron. 24(11): 868-871. November, 1932. (Cooperation between the Division of Cereal Crops and Diseases and the Iowa Agricultural Experiment Station.)

Holbert, James R., and Benjamin Koehler. Results of Seed Treatment Experiments for Dent Corn. U. S.Dept. Agr. Tech. Bul. 260, 64 p., 2 pls., 19 figs. December, 1931. [Received February, 1932.] (Cooperation between the Division of Cereal Crops and Diseases and the Funk Bros. Seed Co., Bloomington, Ill., and the Illinois Agricultural Experiment Station.)

Jenkins, Merle T. An Additional Pair of Factors Affecting Anthocyanin Pigment in Maize. Jour. Agr. Research 44(6): 495-502, fig. 1. March 15, 1932. (Cooperation between the Division of Cereal Crops and Diseases and the Iowa Agricultural Experiment Station.)

_____ Differential Resistance of Inbred and Crossbred Strains of Corn to Drought and Heat Injury. Jour. Amer. Soc. Agron. 24(6): 504-506. June, 1932.

_____ and Arthur M. Brunson. Methods of Testing Inbred Lines of Maize in Crossbred Combinations. Jour. Amer. Soc. Agron. 24(7): 523-530. July, 1932. (Cooperation between the Division of Cereal Crops and Diseases and the Iowa and Kansas agricultural experiment stations.)

Park, J. B., Arthur Anderson, and M. T. Meyers. Variability of Sweet Corn Hybrids As Affected by Genetic Constitution. (Abs.) Sixth Internatl. Congr. Genetics (Ithaca) Proc. v. 2, p. 148-150. [1932.] (Cooperation between the Division of Cereal Crops and Diseases and the Ohio Agricultural Experiment Station and the department of farm cro s of the Ohio State University.)

Randolph, L. F. Some Effects of High Temperature on Polyploidy and Other Variations in Maize. Natl. Acad. Sci. Proc. 18 (3): 222-229. March, 1932. (Cooperation between the Division of Cereal Crops and Diseases and the Cornell (N.Y.) Agricultural Experiment Station.)

_____ The Chromosomes of Haploid Maize, with Special Reference to the Double Nature of the Univalent Chromosomes in the Early Meiotic Prophase. (Abs.) Science 75: 566-567. May 27, 1932. (Cooperation between the Division of Cereal Crops and Diseases and the Cornell (N. Y.) Agricultural Experiment Station.) (Read by Dr. Randolph at the meetings of the National Academy of Science in Washington, May, 1932.)

Richey, Frederick D., and George F. Sprague. Some Factors Affecting the Reversal of Sex Expression in the Tassels of Maize. Amer. Nat. 66: 433-443. September-October, 1932.

Robinson, Joe L. and A. A. Bryan. Iowa Corn Yield Test. Results for 1931. Iowa Corn and Small Grain Growers' Assoc. Report No. 12, pp [2]-32, illus. February, 1932. (Cooperation between the Division of Cereal Crops and Diseases and the Iowa Corn andSmall Grain Growers' Association and the Iowa Agricultural Experiment Station.)

Sprague, George F. The Inheritance of Colored Scutellums in Maize. U. S. Dept. Agr. Tech. Bul. 292, 44 p., 1 pl. April, 1932.

_____ The Nature and Extent of Hetero-Fertilization in Maize. Genetics 17(3): 358-368, figs. 1-2. May, 1932.

_____ and Merritt N. Pope. A Case of Two Simultaneous Mutations for Virescent Seedlings in Maize. Amer. Nat. 66(704): 284-285. May-June, 1932.

Flax

Dillman, A. C., and J. C. Brinsmade, Jr. Dehiscence of the Boll of Linum rigidum and Related Species. Jour. Agr. Research 44(1): 21-27, figs. 1-3. January 1, 1932.

Grain Sorghum and Broomcorn

Martin, John H. Recurving in Sorghums. Jour. Amer.Soc. Agron. 24(6): 500-503. June, 1932.

Sieglinger, John B. Inheritance of Height in Broomcorn. Jour. Agr. Research 44(1): 13-20, figs. 1-4. January 1, 1932.

_____ Seed Selection in Sunrise Kafir. Jour. Amer.Soc. Agron. 24(5): 411-416. May, 1932.

_____ Developing Grain Sorghums for Combine Harvesting. New Agr. Rev. [Kansas City] 1(9): 6-8. May, 1932.

Oats

Coffman, F. A., T. R. Stanton, B. B. Bayles, G. A. Wiebe, R. W. Smith, and V. F. Tapke. Inheritance of Resistance in Oats to Ustilago levis. Jour. Agr. Research 43(12): 1085-1099. December 15, 1931. [Received February 11, 1932.] (Cooperation between the Division of Cereal Crops and Diseases and the Iowa, North Dakota, Montana, Idaho, and Oregon agricultural experiment stations.)

_____ and J. W. Taylor. Prevalence and Origin of Fatuoids in Fulghum Oats. (Abs.) Sixth Internatl. Congr. Genetics (Ithaca) Proc. v. 2, p. 28-29. [1932.]

Davis, L. L., and T. R. Stanton. Studies on the Breaking Strength of Straw of Oat Varieties at Aberdeen, Idaho. Jour. Amer. Soc. Agron. 24(4): 290-300, fig. 1. April, 1932. (Cooperation between the Division of Cereal Crops and Diseases and the Idaho Agricultural Experiment Station.)

Proso

Brandon, J. F., Alvin Kezer, J. J. Curtis, and D. W. Robertson. Proso or Hog Millet in Colorado. Colo. Agr. Expt. Sta. Bul. 383, 12 p., 5 figs. January, 1932. (Cooperation between the Divisions of Cereal Crops and Diseases and Dry Land Agriculture and the Colorado Agricultural Experiment Station.)

Rice

Davidson, Jehiel, and C. E. Chambliss. Chemical Composition of Rice and its Relation to Soil Fertility in China and Japan. Science 75 (1941): 294. March 11, 1932.

Wheat

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PATHOLOGIC SUBJECTS

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PHYSIOLOGIC SUBJECTS

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ORGANIZATION OF THE DIVISION OF CEREAL CROPS AND DISEASES

January 1, 1933

Max A. McCall, Ph. D., Principal Agronomist in Charge.

CEREAL CROPS

(1) Wheat Investigations

S. Cecil Salmon, Ph. D., Prin. Agron. In charge wheat and rye investigations.
J. Allen Clark, M. S., Sr. Agron. Spring wheat.
Karl S. Quisenberry, Ph. D., Agron. Hard red winter wheat. Buckwheat.
Wm. J. Sando, M. S., Assoc. Agron. Breeding, species hybrids, cytology, physiology.
Burton B. Bayles, M. S., Assoc. Agron. Wheat in western region. Wheat physiology.
Colburn C. Fifield, B. A., Assoc. Bak. Tech. Milling and baking.
Donald J. Martin, B. S., Jr. Agron. Milling and baking.
Sidney R. Snider, B. S., Jr. Chem. Milling and baking.
Philip Talbott, Sr.Sci. Aid. Milling and baking.
Clarence G Colcord, Sci. Aid. Wheat agronomy.

(2) Oat Investigations

T. Ray Stanton, M. S., Sr. Agron. In charge.
Franklin A. Coffman, M. S., Assoc. Agron.

(3) Barley Investigations

Harry V. Harlan, D. Sc., Prin. Agron. In charge.
Merritt N. Pope, Ph. D., Agron.
Mary L. Martini, B. S., Asst. Bot.
Lucille Reinbach, B. A., Jr. Agr. Stat.

(4) Rice Production and Improvement

Jenkin W. Jones, M. S., Sr. Agron. In charge.

(5) Rice Technology (and wild rice)
Charles E. Chambliss, M. S., Assoc. Agron. In charge.

(6) Corn Investigations
Frederick D. Richey, B. S., Prin. Agron. In charge.
Curtis H. Kyle, B. S., Sr. Agron. Corn in Southern States.
George F. Sprague, Ph. D., Asst. Agron. (Arlington Farm)

(7) Grain Sorghum and Broomcorn Investigations (and proso investigations)
John H. Martin, Ph. D., Sr. Agron. In charge.

(8) Seed Flax Investigations
Arthur C. Dillman, M. S., Assoc. Agron. In charge.

CEREAL DISEASES
Aaron G. Johnson, Ph. D., Prin. Path. In charge.

(1) Sac and Imperfect Fungi Investigations
Aaron G. Johnson, Ph. D., Prin. Path. In charge.

(2) Cereal Rust Investigations
Harry B. Humphrey, Ph. D., Prin. Path. In charge.

(3) Cereal Smut Investigations
James A. Faris, Ph. D., Sr. Path. In charge.
Herman A. Rodenhiser, Ph. D., Path. (physiologic specialization in smuts)(genetics of smuts)

(4) Cereal Bacteria Investigations (and milo root and stalk disease)
Charlotte Elliott, Ph. D., Assoc. Path.

(5) Cereal Pathologic Physiology
Annie M. Hurd-Karrer (Mrs.), Ph. D., Assoc. Physiol. (plant acidity, photoperiodism, selenium in plants)

ADMINISTRATIVE
Hugh S. Smith, Head Clerk.
Anna H. B. Kinney (Mrs.) Editor and Librarian.
Elizabeth C. Lambert, Accounts.
Charles F. Heasty, Property and Supplies.
Eva P. LeFever (Mrs.) Mail and Files.

FIELD STATIONS
[Names starred (*) are part-time employees. Where two or more individuals are engaged on the same project at a station, a figure (1) is placed opposite the name of the one in charge; if engaged in different projects at the same station each is assumed to be in charge of his own project.]

Arlington Experiment Farm - Rosslyn, Va.
John W. Taylor, M. S., Assoc. Agron. (Cereal prod. and improvement; wheat, oats, barley, rye)
Harold H. McKinney, M. S., Sr. Path. (Virus diseases and wheat physiology.)
Victor F. Tapke, Ph. D., Path. (Loose smuts)
Robert W. Leukel, M. S., Assoc. Path. (Wheat nematode, seed treatments, smuts, soil temperature control)
Walter Marcey, Head gardener (Virus diseases)
Fred Young, Asst. Sci. Aid. (Cereal diseases)
Horace V. Wester, Jr. Sci. Aid (Cereal smuts)
Thomas B. Meyer, B. A., Farm laborer (wheat)
Frank V. Stevenson, Farm laborer (oats)

Tucson, Ariz. - Agr.Exp. Sta.
Arthur T. Bartel, M. S., Jr. Agron. (cereal prod. and improvement; wheat, grain sorghums, barley, oats).

Fayetteville, Ark. - Agr. Exp. Sta.
Edgar C. Tullis, Ph. D., Agt. (rice diseases). (1)
Elza M. Cralley*, Ph. D., Agt. (rice diseases).

Stuttgart, Ark. - Rice Branch Exp. Sta.
Charles Roy Adair, M. S., Jr. Agron. (rice breeding; oats).

Berkeley, Calif. - Agr. Exp. Sta.
Ruth F. Allen, Ph. D., Path. (cytology of rusts).
Biggs, Calif. - Biggs Rice Field Sta.
Loren L. Davis M. S., Asst. Agron. and Supt. (rice prod. and improvement).
Davis, Calif. - Agr. Exp. Sta.
Gustav A. Wiebe, M. S., Asst. Agron. (cereal prod. and improvement; wheat, barley, oats).
Akron, Colo. - United States Dry-Land Field Sta.
John J. Curtis, B. S., Jr. Agron. (cereal prod. and improvement wheat, oats, barley, grain sorghums, proso, corn).
Athens, Ga. - State College of Agriculture
Ross A. Childs*, M. S., Agt. (cereal prod. and improvement; wheat, oats, barley, rye).
Tifton, Ga. - Coastal Plain Exp. Sta.
Harry S. Garrison, B. S., Asst. Agron. (corn inv.; oats).
Aberdeen, Idaho - Aberdeen, Substa.
Harland Stevens, B. S., Agt. (cereal prod. and improvement; barley, oats, wheat).
Moscow, Idaho - Agr. Exp. Sta.
Victor H. Florell, Ph. D., Assoc. Agron. (cereal prod. and improvement; wheat, barley, oats; cytology).
Wayne M. Bever, M. S., Jr.Path. (stripe rust). (1)
Bloomington, Ill. - Funk Bros. Seed Co.
James R. Holbert, Ph. D., Sr. Agron. (corn root-rot, stalk-rot, and ear-rot diseases; corn breeding and physiology). (1)
Boyd C. Frye, Asst. Sci. Aid (corn root-rot, stalk-rot, and ear-rot diseases).
LaFayette, Ind. - Agr. Exp. Sta.
John F. Trost, M. S., Assoc. Path. (corn root-rot, stalk-rot, and ear-rot diseases; sweet-corn diseases. (1)
Ralph A. St. John, M. S., Assoc. Agron. (corn root-rot, stalk-rot, and ear-rot diseases; corn breeding).
Glenn M. Smith, M. S., Asst. Path. (sweet-corn diseases).
Roy A. Weaver*, B. S., Agt. (chemical studies of corn diseases).
Ralph M. Caldwell, Ph. D., Assoc. Path. (leaf rust). (1)
Leroy E. Compton, M. S., Asst. Path. (leaf rust).
Ames, Iowa - Agr. Exp. Sta.
Merle T. Jenkins, Ph. D., Assoc. Agron. (corn inv.). (1)
Arthur A. Bryon, Ph. D., Assoc. Agron (corn inv.).
Hickman C. Murphy, Ph. D., Asst Path. (oat crown rust).
Lyman C. Burnett*, M. S., Agt. (cereal prod. and improvement; oats, wheat).
R. W. Jugenheimer, Agt. (corn inv.)
Hays, Kans.- Fort Hays Branch Sta.
Arthur F. Swanson, M. S., Assoc. Agron. (in charge cereal prod. and improvement; wheat, grain sorghums, broomcorn, barley, oats, corn).
Robert Hunter, Agt. (cereal prod. and improvement).
Manhattan, Kans. - Agr. Exp. Sta.
Arthur M. Brunson, Ph. D., Agron. (corn inv.; pop corn). (1)
Carl W. Bower, M. S., Asst. Agron. (corn inv.)
John H. Parker*, Ph. D., Agron. (cereal breeding; wheat, grain sorghums, barley, oats).
W. H. von Trebra*, B. S., Agt. (cereal breeding).
Hurley Fellows, Ph. D., Assoc. Path. (wheat foot rots). (1)
Lytton W. Boyle, M. S., Asst. Path. (wheat foot rots).
Christian H. Ficke, M. S., Jr. Path. (wheat foot rots).
Charles O. Johnston, M. S., Assoc. Path. (leaf rusts).
Baton Rouge, La. - Agr. Exp. Sta.
Hugo Stoneberg, M. S., Asst. Agron. (corn inv.).
Crowley, La. - Rice Exp. Sta.
J. Mitchell Jenkins*, B. S. Assoc. Agron. and Supt. (rice prod. and improvement).
Albert L. Smith, Ph. D., Agt. (cooperative rice investigations).
St. Paul, Minn. (University Farm) - Agr. Exp. Sta.
Moses N. Levine, Ph. D., Path. (stem rust, physiologic forms, uniform rust nurseries).
Helen Hart*, Ph. D., Agt. (stem rust).
Elmer R. Ausemus, Ph. D., Assoc. Agron. (wheat-breeding nursery).
Rayburn H. Bamberg, M. S., Agt. (cereal diseases).
Herbert K. Hayes*, Sc. D., Collab. (wheat breeding).
Clyde C. Allison*, M. S., Agt. (flax rust).

Columbia, Mo. - Agr. Exp. Sta.
Lewis J. Stadler*, Ph. D., Sr. Geneticist (corn inv.).
Elsberry, Mo. (P. O. address Agr. Exp. Sta., Columbia, Mo.)
Bascom M. King*, A. M., Agt. (rice prod. and improvement).
Moccasin, Mont. - Judith Basin Substa.
Joe L. Sutherland, M. S., Jr. Agron. (cereal prod. and improvement; wheat, oats, barley, flax).
Lincoln, Nebr. - Agr. Exp. Sta.
Coit A. Suneson, M. S., Jr. Agron. (wheat prod. and improvement).
North Platte, Nebr., - North Platte Substa.
Nelson E. Jodon, B. S., Jr. Agron. (cereal prod. and improvement; corn, wheat, oats, barley, grain osrghums).
Ithaca, N. Y. - Cornell Univ. Agr. Exp. Sta.
Lowell F. Randolph, Ph. D., Assoc. Cytol. (cytology, histology, and morphology of corn).
William T. Craig*, Agt. (cereal prod. and improvement; wheat, oats, barley).
Ernest Dorsey*, Ph. D., Agt. (cytology of cereals).
Dickinson, N. Dak. - Dickinson Substa.
Ralph W. Smith, M. S., Assoc. Agron. (cereal prod. and improvement; wheat, oats, barley, flax, corn, rye, proso).
Fargo, N. Dak., (State College Station) - Agr. Exp. Sta.
Harold H. Flor, Ph. D., Assoc. Path. (flax diseases). (1)
H. L. Bolley*, M. S., Agt. (flax introductions; flax diseases).
Langdon, N. Dak. - Langdon Substa.
Glenn S. Smith, M. S., Jr. Agron. (cereal prod. and improvement; wheat, oats, barley, proso).
Mandan, N. Dak. - Northern Great Plains Field Sta.
John C. Brinsmade, Jr., A. B., Asst. Agron. (flax inv.)
Vincent C. Hubbard, M. A., Jr. Agron. (cereal prod. and improvement; wheat, oats, barley).
Wooster, Ohio - Agr. Exp. Sta.
Jasper D. Sayre, Ph. D., Physiol. (corn physiology). (1)
John S. Cutler*, M. S., Agt. (corn inv. outlying stations).
Vincent H. Morris*, Ph. D., Agt. (physiology and biochemistry of corn).
Glen H. Stringfield, M. S., Agt. (corn inv.). (1)
Woodward, Okla. - Southern Great Plains Field Sta.
John B. Sieglinger, M. S., Agron. (grain sorghums and broomcorn).
Edmund Stephens, M S., Jr. Agron. (cereal prod. and improvement; wheat, barley).
Corvallis, Oreg. - Agr. Exp. Sta.
Roderick Sprague, Ph. D., Asst. Path. (wheat foot rots).
Moro, Oreg. - Sherman County Branch Sta.
David E. Stephens*, B. S., Sr. Agron. and Supt. (cereal prod. and improvement; tillage and rotations; wheat, barley, oats). (1)
Robert B. Webb, B. S., Jr. Agron. (cereal prod. and improvement).
Robert B. Hoskinson, Sr. Sci. Aid (cereal prod. and improvement).
Pendleton, Oreg. - Pendleton Field Sta.
J. Foster Martin, M. S., Jr. Agron. (cereal prod. and improvement; wheat, barley, oats).
Redfield, S. Dak. - U. S. Field Sta.
Edgar S. McFadden, B. S., Assoc. Agron. (cereal prod. and improvement; wheat, oats, barley, proso).
Knoxville, Tenn. - Agr.Exp. Sta.
Ludwig S. Mayer, M. S., Asst. Agron. (corn inv.)
Beaumont, Tex. - Substation No. 4
Henry M. Beachell, B. S., Agt. (rice breeding).
Denton, Tex. - Substation No. 6
Irvin M. Atkins, B. S., Jr. Agron. (cereal prod. and improvement; wheat, oats).
Logan, Utah - Agr. Exp. Sta.
Rollo W. Woodward, M. S., Jr. Agron. (cereal prod. and improvement; wheat, oats, barley, corn, grain sorghums).
Pullman, Wash. - Agr. Exp. Sta.
Edward F. Gaines*, Sc. D., Agt. (cereal smuts and breeding for smut resistance).
C. S. Holton, Ph. D., Asst. Path. (cereal smuts).
Orville A. Vogel, M. S., Agt. (wheat prod. and improvement).

Madison, Wis. - Agr. Exp. Sta.
James G. Dickson*, Ph. D., Agt. (wheat and barley scab; corn rots). (1)
Allan D. Dickson, Ph. D., Agt. (barley scab).
Paul E. Hoppe, B. S., Assoc. Path. (barley scab and corn rots).
Ruebush G. Shands Ph. D., Agt. (barley scab).
Helen Johann, A. M., Assoc. Path. (wheat scab).
Chester Barlow,* Asst. Sci. Aid (wheat scab).

COOPERATIVE CEREAL EXPERIMENTS SUPERVISED LOCALLY BY MEN
NOT EMPLOYED BY THE DIVISION OF CEREAL CROPS AND DISEASES
(Excluding small cooperative disease and breeding nurseries and farmers' trials)

Mesa, Ariz. - Salt River Valley Exp. Farm (C. J. Wood)
A. T. Bartel, Tucson Ariz. (wheat)
Sacaton, Ariz. - U. S. Field Station.
C. J. King (barley, wheat, grain sorghums)
Hesperus, Colo. - Fort Lewis Substation
D. W. Koonce (wheat)
Felt, Idaho - High Altitude Station.
W. A. Moss (wheat)
Sandpoint, Idaho - Sandpoint Substation (wheat)
Urbana, Ill. - Agr. Exp. Station.
J. R. Holbert, Bloomington, Ill. (corn physiology)
Colby, Kans. - Colby Exp. Station
E. H. Coles (wheat)
Crookston, Minn. - N. W. Exp. Station.
R. S. Dunham (wheat)
Morris, Minn. - West Central Exp. Station.
R. O. Bridgford (wheat)
St. Paul, Minn. - Agr. Exp. Station.
A. C. Arny (flax)
Waseca, Minn. - S. E. Exp. Station.
R. E. Hodgson (wheat)
Bozeman, Mont. Agr. Exp. Station.
A. G. Goth (wheat, flax)
Havre, Mont. - Northern Mont. Substation.
M. A. Bell (wheat, flax)
Huntley, Mont. - Huntley Substation.
Dan Hansen (wheat)
Alliance, Nebr. - Box Butte Exp. Farm.
C. A. Suneson, Lincoln, Nebr. (wheat)
Tucumcari, N. Mex. - U. S. Field Station.
D. R. Burnham (grain sorghum and broomcorn)
Edgeley, N. Dak. - Edgeley Substation.
O. A. Thompson (wheat)
Hettinger, N. Dak. - Hettinger Substation.
C. H. Plath (wheat)
Williston, N. Dak. - Williston Substation.
E. G. Schollander (wheat)
Columbus, Ohio - Agr. Exp. Station
G. H. Stringfield, Wooster, Ohio (corn breeding)
Oak Harbor, Ohio
G. H. Stringfield, Wooster, Ohio (corn borer agronomic experiments)
Carrier, Okla.
C. B. Cross, Stillwater, Okla. (wheat)
Goodwell, Okla. - Panhandle A. & M. College.
H. H. Finnell (wheat)
Lawton, Okla. - U. S. Field Station.
W. M. Osborn (wheat, oats, barley, grain sorghum)
Stillwater, Okla. - Agr. Exp. Station.
C. B. Cross (wheat)
Burns, Oreg. - Harney County Branch Sta.
Obil Shattuck (wheat)
Corvallis, Oreg. - Agr. Exp. Station.
D. D. Hill (wheat)
Union, Oreg. - Eastern Oreg. Branch Station.
D. E. Stephens (wheat)

Florence, S. Car. - Pee Dee Exp. Station
R. E. Currin (corn testing and breeding)
Brookings, S. Dak. - Agr Exp. Station
K. H. Klages (wheat)
Eureka, S. Dak. - Eureka Substation.
Walter Schonbrod (wheat)
Highmore, S. Dak. - Highmore Substation.
S. W. Sussex (wheat)
Newell, S. Dak. - U. S. Exp. Farm.
Beyer Aune (wheat)
Amarillo, Tex. - Price Memorial College,
I. M. Atkins, Denton, Tex. (wheat)
Big Spring, Tex. - U. S. Field Station.
F. E. Keating (grain sorghum and broomcorn)
Dalhart, Tex. - U. S. Field Station.
B. F. Barnes (grain sorghum and broomcorn)
San Antonio, Tex. - U. S. Field Station
G. T. Ratliffe (flax, grain sorghum)
Nephi, Utah - Nephi Dry-Farm Substation.
A. F. Bracken (wheat)
Lind, Wash. - Adams Branch Exp. Station.
H. M. Wanser (wheat)
Prosser, Wash. - Irrigation Branch Exp. Station.
H. P. Singleton (wheat)
Cheyenne, Wyo. - Cheyenne Exp. Farm.
A. L. Nelson (wheat)
Sheridan, Wyo. - U. S. Field Station.
R. S. Towle (wheat, oats, barley, flax)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)(Feb. 10) The weather in January was very disagreeable. The lowest temperature was 29° on January 1, and ice formed on one other day. The precipitation recorded on 11 days totaled 3.57 inches. On several days there was heavy fog and some rain.

Very little farm work was done on account of the wet soil.

The main work on the Station was building fences around the new tract of land, straightening the fence on the north side of the old tract, and completing the plowing operations.

The Parish Police Jury has agreed to build a road along the west boundary of the new tract, using a strip of land given by the Station in exchange for the present road lying between the old and new tracts. This will allow the Station to have all its land in one tract.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, J. F. Trost)(Jan. 20) The 1932 season was favorable for dent corn over most of Indiana. Average yields are estimated at 37.5 bushels per acre, as compared with the 10-year average of 34.8 bushels. Dry rot caused by Diplodia zeae was more prevalent in Indiana than in any year since 1921. A number of farmers attending the Annual Agricultural Conference reported that they have been able to supply all their fuel needs from the discarded dry-rotted ears. Low percentages of ear rots were recorded in field experiments conducted by R. R. St. John at Wanatah in northern Indiana, and at Farmland in extreme eastern central Indiana. In experiments at La Fayette, losses from ear infection with Diplodia amounted to 6 per cent of the total yield of all experiments. Secondary rots following heavy ear-worm infestation caused more damage than dry rot at Vincennes, Bedford, and North Vernon, in southern Indiana. Reports from elevators and terminal markets indicate that this year damaged kernels are more important than moisture in determining market grade.

The corn in all field experiments excepting those on overwintering on inbred strains has been harvested and most of the yield calculations have been completed. Some of the strains from the Arlington Experiment Farm and from Iowa and Illinois, entered in the regional adaptation series sponsored by F. D. Richey, have ranked near the top of the entire list in total yields.

Up to the present time 40 of the 109 cooperating farmers who received hybrids for comparison with their own strains of corn in 1932 have submitted complete reports of their results. Complete records have been obtained from counties where experimental hybrids have been included in corn varietal yield tests under the direct supervision of the extension crop specialist with the assistance of local county agents.

R. R. St. John and G. M. Smith prepared and presented an educational hybrid-corn exhibit, which was displayed during the annual Agricultural Conference at Purdue from January 9 to 13. This exhibit demonstrated by means of bushel-basket samples of ear corn the characters of the high-yielding, disease-resistant strains of corn in field trials. There was more genuine interest than in any previous year in regard to improving dent corn and securing wilt-resistant sweet corn. Several growers of seed corn are ready to proceed with the production of crossed corn in detasseling fields.

At present low-temperature greenhouses are being used to capacity for seedling experiments of dent corn and the warmer greenhouses are occupied by sweet-corn strains inoculated with bacterial wilt.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(Feb. 1) The maximum temperature in January was 72°; minimum, 25°. The mean was 8.2° above normal, the second highest ever recorded for January. Temperatures of freezing or below were recorded on only six days. The precipitation totaled 3.33 inches.

Small grain crops made good growth. Fall-sown grain in dry soil emerged from January 1 to 8 and has become well established. The heavy rainfall in December and the rains in January caused fields to remain wet throughout the month. For the past two days it was possible to do field work and to start sowing some spring oats. All preparations for sowing experimental spring oats have been made and sowing will be started as soon as seed beds become dry enough.

According to newspaper reports from the Texas Panhandle considerable injury was done to winter wheat by dust storms on January 18 and 21. The damage was estimated at 10 per cent in Moore, Sherman, Deaf Smith, and northwest Castro and Parmer counties. Rain is needed throughout the north plains, although the south plains are in better condition.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(Jan. 31) Winter wheat on the Station has made some growth during the mild weather in January. Mr. Sieglinger and the writer attended the meetings of the Oklahoma Crop Improvement Association in Oklahoma City on January 19. None of the winter wheat observed en route had made good fall growth; the most vigorous wheat was that drilled between cotton rows.

The precipitation in January totaled 0.07 of an inch; maximum temperature, 69° on the 21st; minimum, 17° on the 12th.

KANSAS

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (Feb. 1) The condition of winter wheat in Kansas in January remained about the same as in December, which was but 57 per cent of normal. Very little moisture fell during the month and the shortage in the western part of the State remains critical. Several severe dust storms occurred in western counties and it is feared that some of the wheat that came up in the fall in that area will be blown out.

This was the mildest January ever recorded at Manhattan. Temperatures were considerably above normal throughout the month. The springlike weather and absence of frost gave farmers ample opportunity to catch up with plowing and other necessary work. The precipitation was only 0.12 inch of rain and there were very few cloudy days. The mild weather caused many maple trees to start blooming on January 30.

Nursery sowings of winter wheat are in fairly good condition despite the exceptionally dry winter. However, top growth is only about one-half what it was at the same time last year. Very little rust was present in winter-wheat sowings last fall and only occasional pustules of leaf rust could be found in January. The amount of inoculum seems to be insufficient for heavy early infection of leaf rust next spring.

Greenhouse and laboratory experiments in footrots and leaf rust of wheat, genetic studies of corn, and cold resistance studies of wheat are in progress, and certain phases of each are nearing completion.

NEBRASKA

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (Feb. 1) Cool weather and scant moisture in this vicinity last fall retarded growth of wheat. Wheat sown the first week in October compares in growth to that sown about October 20 in an average year. There is no acute shortage of moisture, however, and so far the adapted wheats have not been injured by the cold. Volunteer spring grains were killed and certain soft wheats were injured in early December when a low temperature of -17° F. (with snow cover) was recorded.

A heavy emergence of Hessian fly was observed on October 17, threatening another outbreak, but no "flax-seeds" developed because of the cold weather that followed soon thereafter. Controlled-hardiness studies for the winter are nearly completed. Lethal temperatures for field-grown adapted wheats unprotected by snow, as established in these studies in January, averaged -12° this year, -4° in 1932, -20° in 1931.

More farmers attended "Organized Agriculture" during the first week in January than ever before.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) Feb. 1) Because of the dry fall winter-wheat varieties entered the winter with very little growth and consequently were not in optimum condition to withstand severe exposure. If they were not killed by the low December temperatures they have a chance of surviving, as the ground has been covered with snow since January 2 and is covered with about 9 inches of snow at present. More snow is falling.

In January 15.2 inches of snow fell, totaling 1.23 inches of precipitation. Maximum temperature, 51° on the 9th; minimum, -22° on the 16th.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(Jan. 31) The weather of the first half of January was comparatively mild and there was but little snow on the ground until the middle of the month. During the third week about 8 inches of snow fell and later there were a few minor snowfalls. The prairie is now uniformly covered with 8 or 10 inches of snow, which will afford ample protection to the winter grain for some time. Steady winter weather without extremes of temperature has prevailed during the latter half of the month. The minimum temperature was 15° below zero on the 30th.

The cereal report for 1932 is now about finished.

Agricultural Experiment Station, State College Station, Fargo (Flax Diseases, H. H. Flor)(Dec. 23) Cooperative tests conducted in 1931 indicated that seed treatment had no appreciable effect on the amount of flax wilt developing in either a resistant or a susceptible variety. In the 1932 trials, only Bison, a popular wilt-resistant variety, was used. All the seed was treated at Fargo.

The results of the 1932 tests at Bozeman, Mont., Brookings, S. Dak., and Dickinson, Fargo, and Langdon, N. Dak., corroborate those of the previous year. The formaldehyde treatment appreciably reduced germination and stand in most instances. Because of injury to germination, the plots sown with formaldehyde treated seed yielded less in most cases than the check or dust treatment plots.

In the North Dakota and Montana tests none of the treatments was sufficiently superior to the checks to be significant. At Brookings, S. Dak., the copper-carbonate plots appeared to be more thrifty and yielded somewhat more than the check plots. At St. Paul and Waseca, Minn., both the copper-carbonate and ceresan dust treatments appeared to increase the stand, and at the former station yield also appeared to be benefited.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(Feb. 3) More than a foot of snow fell in January, the total precipitation being 1.35 inches, or more than twice the normal amount. The maximum temperature was 30°, minimum, -17°. Highways leading out of Langdon are being kept open only with difficulty.

A large part of January was spent in threshing head selections and in taking data on the inheritance of certain characters in F_3 durum hybrid material. Seed from approximately 800 F_3 plants that have amber kernels and that are free from stem-rust infection will be drilled in head rows in 1933.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (Feb. 1) The wind blew every day during the first week of January and there were intermittent windstorms from then on to the 15th. Fallow fields were kept bare of snow during this period.

No low temperatures were recorded in January and the snowfall was very light. In general typical winter weather prevailed.

Maximum temperature, 51° on the 8th; minimum, -11° on the 16th. Precipitation, 0.41 of an inch.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (Feb. 1) The weather in January was mild and cloudy. The mean temperature was 25°. Snow fell on 17 days; the total water content was 1.87 inches.

In a snow survey made on January 28 from 75 to 90 inches of loose snow were found at elevations above 8,000 feet. The moisture content was approximately 16 inches.

Winter wheat germinated very poorly last fall because of lack of moisture, and there has been no rain or thawing of snow during the winter. The ground still remains dusty under the heavy snow cover.

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel) (Feb. 7) The mean minimum temperature in January was 33°; mean maximum 62.4°; total precipitation, 0.93 of an inch. Today Tucson is having its second snowfall of the season. The first snow on December 22 was 1.5 inches in depth. The one today is probably slightly less.

The wheat varieties in the nursery are making rather slow growth. This is especially true of those sown in the advanced nursery trials the first part of December. In the date-of-seeding experiment, Marquis sown on October 20, shows considerable injury from frost. Sonora shows less injury than Baart. The varieties sown October 20 now are from 2 to 5 inches high and have from 4 to 6 leaves on the culms.

Yields of grain-sorghum varieties grown at Sacaton, Ariz., in 1932, are shown in the following table:

Variety	C. I. No.	Yield (Bu. per acre)
Double Dwarf milo	668	56.4
Fargo Straightneck milo	609	45.6
Beaver milo	671	43.8
Dwarf Yellow milo	332	39.6
Hegari	620	33.9
Feterita	182	33.5
Grohoma	929	32.9
Wheatland milo	918	31.8
Sharon kafir	613	27.1
Dwarf White Durra	977	12.0

A correction

In the report of A. M. Brunson, published in the Cereal Courier of January 10, 1933, Vol. 25, No. 1, p. 3, the word "production" in the first sentence should have been "condition."

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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 25 March 10, 1933 No. 3

Personnel (Feb.11-March 10) and Field Station (Feb. 1-28)

PERSONNEL ITEMS

The degree of Doctor of Philosophy was conferred upon Mr. L. W. Boyle by the University of Wisconsin, in June, 1932.

Dr. M. A. McCall left Washington on March 10 for Chicago, Ill., and Madison, Wis.

Dr. J. D. Sayre left Washington on March 3 for his headquarters at the Ohio Agricultural Experiment Station, Wooster, after spending several days conferring with members of the Division relative to cooperative corn investigations.

Mr. C. A. Vogel, stationed at the Washington Agricultural Experiment Station, Pullman, was in Washington from February 20 to March 6 in the interests of cooperative cereal experiments. En route to his headquarters he will stop at points in New York, Wisconsin, Minnesota, and North Dakota.

MANUSCRIPTS SUBMITTED

5. Comparison of Yielding Ability of Certain Hybrids and Open-Pollinated Strains of Corn in Indiana. J. F. Trost. Feb. 9. Ann. Rpt. Ind. Corn Growers' Assoc. 1932.

6. Cold Resistance Adjustments of Field Hardened Winter Wheats as Determined by Artificial Freezing. C. A. Suneson and G. L. Peltier. Feb. 27. Jour. Amer. Soc. Agron.

7. A Dwarf Mutation in Kafir. John B. Sieglinger. March 3. Jour. Heredity.

RECENT PUBLICATIONS

Catalase Activity and Respiration in the Leaves of Growing Barley. Merritt N. Pope. Jour. Agr. Research 46(1): 45-40, fig.1. Jan. 1, 1933.

Navarro Oats. T. R. Stanton. Jour. Amer. Soc. Agron. 25(2): 108-112, fig. 1. February, 1933.

Effects of Certain Environmental Factors on Stripe Disease of Barley and the Control of This Disease by Seed Treatment. R. W. Leukel, J. G. Dickson, and A. G. Johnson. U. S. Dept. Agr. Bul. 341, 40 p. February, 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

INDIANA

Purdue University Agricultural Experiment Station, LaFayette (Corn Rots and Metallic Poisoning, J. F. Trost) (Feb. 14) Air temperatures have been unusually low during the past 10 days. Messrs. G. M. Smith and R. R. St. John took advantage of this condition to expose a large number of inbred strains of sweet and dent corn to low soil temperatures and low light intensities during emergence and early seedling stages in the greenhouse germination trials.

Random samples of seed corn are being collected from farmers' cribs and wagons as the corn is husked from the standing stalks in the vicinity of LaFayette. These are being run through greenhouse soil and through rag-doll germinator trials. Germination and seedling vigor are unusally high in this material compared with early selected seed of the 1932 crop. About 12 per cent of the apparently sound ears show some killing from local infections of Diplodia ear rot. The usual wilting and blighting from secondary invasion by Penicillium are abundant in the greenhouse trials now in progress.

Mr. F. D. Richey was here from February 8 to 11 and discussed the cooperative phases of the corn-improvement program. He assisted in planning a uniform technique for comparative corn strain trials involving yield determinations. On February 9 Mr. Richey addressed a group of local agricultural research workers on the present status and scope of corn-improvement research in the United States Department of Agriculture.

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(Feb.15) After the warmest January on record a severe cold snap occurred early in February. The "norther" which swept the entire Middle West from February 6 to 12 struck this station about 2 a. m. on February 7. From 57° on the evening of February 6 the temperature fell to 9° by 7 a. m. on February 7; and an extreme low of 1° was recorded on the morning of February 8. This is the lowest temperature ever recorded in February. Temperatures remained below freezing for four days. Some snow fell but not enough to give proper protection to crops.

A large part of the grain in this section was sown in dry soil in the fall and did not emerge until about the first of January. Because of the warm weather of January and the abundant moisture all the grain crops were in a succulent condition. All oats that emerged in January were killed and are being resown. Barley and wheat were injured to a lesser extent, but the injury done can not be definitely ascertained until growth starts.

All fall-sown field oats on the Substation are being reseeded. Wheat in increase fields was thinned but it is believed that there will be sufficient stand to leave. The varietal wheat test in field plots was injured very slightly. In the advanced wheat nursery only a few strains such as Nebraska No. 28 and Kanred x Marquis (C. I. No. 11374) were injured. In the head row wheat nursery injury was more severe. A number of spring wheats were killed. Spring types were eliminated from a number of hybrids having spring wheat as one parent.

Oats seedings both in field plots and nursery were materially injured. It is believed that the field plots will be able to recover so that fair stands will be left. Nursery seedings did not emerge until January, however, and are badly injured. Spring oats were sown on February 3 and escaped injury, as they had not yet emerged.

Barley seedings in the nursery were so severely injured that in all probability the test will have to be abandoned. The field-plot tests emerged in October and had made fair growth. This growth held the snow and also served as some protection. The winter types of barley were injured to some extent and spring types were thinned considerably.

Reports from the Panhandle indicate that the cold weather did not injure wheat very much but that windstorms continue to cause injury to it.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(March 3) Winter wheats on the Station are recovering nicely from the severe freeze which occurred early in February. With the exception of some tender material in the nursery, there appears to be very little complete killing. Winter-barley varieties in the nursery were badly injured and the uniform oat winter-hardiness nursery is completely killed.

The precipitation since September 1 has been only 32 per cent of the normal for this period. The precipitation in February was 0.52 of an inch, of which 0.35 was in the form of snow; maximum temperature, 74° F. on the 23rd; minimum, -12° on the 8th.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis)(March 1) The precipitation in February totaled but 0.04 of an inch. The dry fall and winter have left the surface soil with little or no moisture. As winter wheat made but little fall growth there is danger that it will be badly injured from soil blowing unless some moisture falls soon. Roads, alleys, and fallow plots on the Station have been cultivated in an effort to prevent soil blowing.

The fifth annual lamb feeders' day was held at the Station on February 24. A good-sized crowd attended.

The temperatures in February were: Maximum, 63° on the 23rd; minimum -23° on the 7th.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden) (March 1) With the exception of two short, cold spells, one in December and the other in February when temperatures were about 30° below zero, the weather of the past winter has been very mild with some thawing nearly every day.

There has been scarcely any precipitation since the ground froze last fall--only an occasional snow flurry that disappeared within a few days. The winter-wheat plots and nursery have been bare and the surface has been dry and cracked nearly all winter. There was no snow protection whatever during the severely cold spells in December and February. Even at this early date winterkilling is evident in the more tender varieties of winter wheat. The hardier varieties still show some signs of life but their vitality appears to be very low.

The frost is out of the ground to a depth of about eight inches and farmers are starting field work.

Preparations are being made to start field work on the Station about March 15 if weather and soil conditions permit.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr. (March 1) Severe winter weather prevailed during the first half of February. Below-zero temperatures were recorded every day and the average daily minimum was -18°. The minimum temperature so far this winter was -36° on February 7. Strong winds accentuated the cold. The weather of the last half of February was mild. The maximum temperature was 52° on February 26 and the minimum 5° on February 16. Freezing temperatures every night have kept the ground frozen. The precipitation for the month totaled 0.34 of an inch.

The snow which covered the ground up to the middle of February melted gradually during the past two weeks. Experimental plots, exposed fields, and hillsides are nearly bare, though deep drifts still remain in sheltered places. The Heart River has risen about four feet during the past three days, but the general breaking up of ice has not yet occurred.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(Feb. 28) The weather of the first half of February was unusually cold, the minimum temperature being below zero every day. The period from the 4th to the 10th was a record breaker; it was extremely cold and there was a blizzard nearly every day. On February 8 the temperature ranged from -36° to -13° and a 30-mile wind filled the air with fine snow. The writer has been in the State 31 years and has never seen so hard a wind during such low temperatures. The extremely cold weather is usually accompanied by still, clear weather. The lowest temperature for the month was -37° on the 7th, and the highest 44° on the 26th.

The snow has melted a little daily for the past 10 days. Some fields are bare but most of them are still covered with snow.

A good snow cover has remained onthe winter grain during the extremely cold weather and it is still 6 to 10 inches deep. The abundance of moisture which will result from the melting snow will help the winter wheat to recover from the effects of the cold.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (March 1) Thawing temperatures the past week have offset the 10-day cold period of early February. The mean temperature for the month was 1.5°. The maximum temperature was 37°, and minimum, -42°; the precipitation totaled 0.42 of an inch.

More head selections of hybrid material, as well as heads for the yield-analysis experiment have been threshed out, completing this phase of the winter's work. Riker mounts have been prepared showing samples of macaroni made from several varieties of durum wheat. Some mounts also have been made of plant specimens showing segregation of characters in certain durum wheat crosses. These mounts will be shown at the annual Winter Fair scheduled for March 7.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (March 1) The weather in February was much colder than normal. One of the worst storms ever experienced in this section lasted from the 5th to the 13th. The lowest temperature was 32° below zero and on several days the subzero temperatures were accompanied by strong winds.

Apparently winter wheat was not injured.

Temperatures; Minimum, -32° on the 6th; maximum, 54° on the 25th. The precipitation was 0.74 of an inch.

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, Harland Stevens) (March 3) This was the coldest February ever experienced at this Substation. The average maximum temperature was 24° and the average minimum was 1°.

The snowfall was 6.5 inches, equivalent to a precipitation of only 0.25 of an an inch. The snow was accompanied by strong winds, making it very disagreeable for livestock as well as for any one who had to be out in it.

The snowfall has been heavy enough on the Jackson Hole watershed to furnish ample water for irrigation during the coming season.

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin)(March 1) It is too early to ascertain definitely how much winter injury was done to the wheat varieties, but the least hardy wheats were killed and the medium hardy ones severely injured. A temperature of -7° on February 9 materially increased the injury, as there was no snow cover. On February 13 the temperature was -20° but the plants were protected by six inches of snow.

Two series of winter wheat varieties were seeded in 53rd-acre plots on January 12 but have not yet emerged.

If the present weather continues it may be possible to begin seed-bed preparation for spring seeding about March 6.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (March 1) The weather of the first three weeks of February was cold. The minimum

temperature was -26° on the 9th. This was the lowest ever recorded at the Experiment Station farm. On 12 days temperatures were below zero. The precipitation in February, in the form of very light and dry snows, totaled 0.43 of an inch. The ground has been well covered with over two feet of light snow, which is just commencing to settle. It is impossible to determine the stand of winter wheat or the degree of winterkilling. Most of the commercial winter-wheat fields lacked sufficient moisture to produce good stands at the time of the first snowfall.

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, L. L. Davis) (March 2) Winter and spring temperatures in the Sacramento Valley have been considerably below normal. The rainfall to date for this year is 4.7 inches, or 1.9 inches below normal. There is a heavy snow pack in the mountains, which insures an ample water supply for the rice crop the coming season. If weather conditions are normal it is hoped that in two weeks work can be started on the preparation of rice land for seeding.

Economic conditions in this section are serious, and there is some question as to what arrangements can be made for financing the rice growers. Unless financial aid can be obtained there probably will be a big reduction in the rice acreage in this section. At present the R. F. C. is considering applications for loans to rice growers.

Yield of Colusa rice grown on 15th-acre plots in fertilizer experiments, 1932

Treatment	Rate of application (Lbs. per acre)	Yield (Lbs. per acre)
No fertilizer	---	2,906
Ammonium sulphate	100	3,911
Do.	150	4,174
Do.	200	4,613

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel) (March 6) The weather in February was rather cold. The mean maximum temperature was 63.3° and the mean minimum, 31.7°. The precipitation was 0.24 of an inch. On February 8 the temperature dropped to 18°. For ten successive days it was below freezing. During this time frosts caused much additional leaf damage to wheat varieties sown on October 20. Hard Federation was injured more than any other variety. Baart was second to Hard Federation in extent of leaf injury. Varieties sown later than October 20 were not injured.

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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 25 April 10, 1933 No. 4
Personnel (Mar. 11-Apr. 10) and Field Station (Mar. 1-31)

PERSONNEL ITEMS

Dr. A. G. Johnson returned on April 6 from a trip to Fayetteville, Ark., Manhattan, Kans., Bloomington and Urbana, Ill., and LaFayette, Ind., where he conferred with Division personnel and officials of the State agricultural experiment stations in the interests of cooperative cereal-disease investigations.

MANUSCRIPTS SUBMITTED

8. Cereal-Disease Forecasting. H. B. Humphrey. March 9. Some Canadian journal.

9. Methods of Estimating the Performance of Double Crosses in Corn. M. T. Jenkins. March 10. Jour. Amer. Soc. Agron.

10. A Method of Making Wheat Crosses. V. H. Florell. March 13. Jour. Heredity.

11. Correlated Inheritance of Reaction to Stem Rust, Leaf Rust, Black Chaff, and Bunt in Spring Wheat Crosses. H. K. Hayes, E. R. Ausemus, E. C. Stakman, and R. H. Bamberg. March 15. Jour. Agr. Research.

12. A Three-Row Nursery Planter for Space and Drill Planting. O. A. Vogel. March 28. Jour. Amer. Soc. Agron.

13. The Nature of Immunity in Plants. J. G. Dickson. March 28. Proc. Fifth Pacific Coast Cong.

14. Earliness and Seasonal Growth Habit in Wheat as Influenced by Temperature and Photoperiodism. H. H. McKinney and W. J. Sando. March 18. Jour. Heredity.

15. Russian Methods for Accelerating Sexual Reproduction ("Iarovization") in Wheat. H. H. McKinney and W. J. Sando. March 20. Jour. Heredity.

16. The Loss in Yield That May Be Expected from Planting Second Generation Double Crossed Seed Corn. F. D. Richey, G. H. Stringfield, and G. F. Sprague. April 3. Jour. Amer. Soc. Agron.

RECENT PUBLICATIONS

Wheat Varieties for the Columbia River Basin of Oregon. D. E. Stephens, R. B. Webb, and J. F. Martin. Oreg. Agr. Expt. Sta. Bul. 308, 37 p., 1 fig. December 1932. (Cooperation between the Division of Cereal Crops and Diseases, and the Oregon Agricultural Experiment Station.)

An Economic Study of Broomcorn Production. R. S. Washburn and J. H. Martin. U. S. Dept. Agr. Tech. Bul. 347, 42 p., 9 figs. February 1933. (Cooperation between the Bureau of Agricultural Economics, the Bureau of Plant Industry, and the Illinois and Kansas agricultural experiment stations.)

Golden Cross Bantam Sweet Corn. Glenn M. Smith. U. S. Dept. Agr. Circ. 268, 12 p., 6 figs. March 1933.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

ARKANSAS

Rice Branch Experiment Station, Stuttgart (Rice Production and Improvement, C. R. Adair)(March 10) The oats here at the Station look very well. There has been practically no winter injury to any of the varieties in either the field or nursery varietal experiments except for a little tip injury, but this has not been so severe as it was at the Arlington Experiment Farm. The weather has been severe enough, however, to cause the elimination of a good many of the plants in the hybrids sent here from Tifton, Ga. The varieties in the uniform crown rust nursery have winterkilled rather badly. Glabrota was all killed; the other spring varieties in the nursery were winterkilled from 50 to 90 percent.

The writer has not had an opportunity to get out to see any oats in farm fields in this section, but henoticed that the fall-sown small grains in Kentucky and Tennessee looked very well.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(April 1) The weather conditions in March were favorable for growth of all crops. The mean temperature was 58.4° F., or 3° above the normal mean. There were no killing frosts. A light frost was recorded on March 20, with a temperature of 28°. The rainfall was 3.41 inches, or 1.45 inches above normal; it was so distributed that it did not interfere with field work very much.

All small grain has made rapid progress. Spring-sown oats are in exceptionally fine condition, not having been injured by the February freeze. Oats and barley resown after the freeze emerged about March 1 and have made rapid progress. Wheat is rather ragged in appearance owing to some later germination in all seedings. Unusually little leaf rust of wheat has appeared this spring. There was considerable leaf rust before the heavy freeze in February, but since all top growth was killed back at that time it has been slow in gaining headway again.

Two seedings of flax were made in March. The stem-rust nursery of spring wheats was sown on March 15. The corn has all been planted and is up to a fine stand.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens) (Apr. 1) Two small showers, totaling 0.48 of an inch, in March have brought the precipitation to 8.70 inches since July 1, the beginning of the winter-wheat crop year. The 18-year average for this period is 15.49 inches. Considering the dry weather and rather severe winter conditions, the winter wheats on the Station look surprisingly well.

The earliest winter-wheat varieties are starting to joint. No leaf rust has been noted so far. Small nurseries of spring oats and barley were sown in early March, and have emerged to good stands.

The maximum temperature was 83° on March 13 and 17; the minimum was 18° on March 20.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker) (March 30) The winter-wheat rod rows have survived the winter, and so far the rather dry, windy spring, in very good condition. The rod rows will be trimmed the first week in April.

There has been very severe killing in the head rows and in the 8-foot rows of spaced hybrids. Nearly all head rows of Kanred x Genesee Giant are killed. Severe losses are probable also in the leaf-rust resistant selections sown in the agronomy nursery by Mr. Johnston.

The sowing of rod rows of oats was begun on March 13. All seedings of varieties, selection and hybrids in rod rows and 8-foot and 5-foot rows, were finished on the 18th. It was fortunate that the seedings were made at this time, as there was a return of winter weather with cold rain and snow on March 19 and 20, which would have delayed seeding until the week of March 27.

On March 28, the remaining ground in the oat nursery was sown to narrow plots of Early Red Texas selection and Kanota by the English half drill strip method. Within the next few days there will be sown a late date-of-seeding experiment with Kanota and a few other varieties that show differential behavior. Another date test will be sown about two weeks from now.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis)(April 1) Winter wheat in the nursery is small and, although some winterkilling has occurred, it has on the whole survived the winter in good shape. The winter wheat varietal experiment has fair to good stands on fallow. It is just emerging on corn land, so it will not be possible to tell the stands for some time yet.

There were several hard driving winds in March and much injury from soil blowing was done to the winter wheat fields on farms in this section. On the station cultivation of open fields with the duck-foot cultivator has prevented soil blowing.

The spring wheat varietal experiment was sown on March 28 and the oat varietal experiment on March 29. The first seeding of the date-of-seeding spring grains was made on March 15. The spring grains nursery and the barley varietal experiment will be sown early next week.

The maximum temperature in March was 76° on the 28th; minimum, 3° on the 5th; the precipitation was 0.74 of an inch.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(April 1) The weather in March was comparatively warm. The temperature ranged from -3° on the 8th to 63° on the 28th. Six and two-tenths inches of snow fell during the month, totaling 1.02 inches of precipitation.

A few spears of green are showing throughout the winter-wheat nursery, even though the ground was bare of snow during much of the coldest weather and severe killing seemed inevitable.

Field work at Mandan was started March 30. Corn stubble was removed from the wheat varietal plots on March 31 with the aid of a potato-digging machine.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(April 1) The weather of the latter part of March was warm and windy and caused the rapid disappearance of snow and the subsequent drying up of the fields. The soil is in good condition for field work, which has begun on a few farms in this vicinity. The soil is still too wet for cultivation where the deeper drifts remained during the winter.

Winter wheat in plots and nursery remained covered by snow until about the middle of March. During the emergence period of last fall growth was checked by the blizzard of October 19. Growth has begun again but the stands are rather thin in places.

Seed is being prepared, and some seeding may be done next week if the present warm weather continues.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(April 1) The winter appears to have been too severe for the uniform winter-hardiness nursery. The snow which covered it all winter was melted the first of March and very few plants show any life.

The mean temperature in March was 20.9°. The precipitation was but 0.27 of an inch. Snow has disappeared gradually during the month till only traces of the larger drifts remain. Fallow ground has thawed only to a depth of 3 or 4 inches. Spring is a little farther advanced than it was a year ago at this date.

Plans for planting the nursery are complete, and weighing up the seed is in progress.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland)(April 1) An early examination of winter-wheat plantings on the Station shows that cold injury has been very high. Only spots favored with snow protection have greened up during the recent warm spells. Fields of winter wheat sown on fallow land are very spotted while that sown in stubble is apparently in good shape.

The weather in March was extremely dry and all crops would be benefited by a good rain.

Plans for spring seeding have been outlined and most of the seed has been weighed and treated for planting.

The maximum temperature in March was 65° on the 28th; minimum, -2° on the 8th; the precipitation was 0.10 of an inch.

Montana Agricultural Experiment Station, Bozeman (Austin Goth)(March 10) This has been one of the most winter-like of Montana winters. At Bozeman temperatures have been low, equaling the all-time low of 36° below zero on one occasion and coming within 1° of it on another. There has been a good snow cover in the higher parts of the valley most of the time. Prospects are good for an ample supply of irrigation water as the mountain snow is deep and well packed.

Winter wheat and perennial forages on the Station farm have been well protected with a deep snow cover most of the cold season. Little killing is expected if conditions continue as in the past.

The following interesting observations were made on Ceres spring wheat.

Using pure seed of Ceres from the varietal trials 1,000 spring-type kernels were selected in the spring of 1932. These kernels were space planted in the field. During the growing season the plants were observed to be true to Ceres type. The plants were harvested and threshed individually. The seed was carefully examined by two experienced observers working together. Only those plant lots that showed a high degree of uniformity for spring or Marquis type were saved for further study.

There was a striking range in type among the various samples. They ranged all the way from very coarse, long, Kota-type kernels down to little, short, B-B-like kernels.

About 90 plant samples were saved, all of which are easily graded hard red spring. A few are outstandingly Marquis-like in type. These samples are to be grown partly at Havre and partly at Bozeman this year.

WASHINGTON

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague)(April 6) Records on winter survival were taken March 21 and 22 in the Cercosporella foot rot plot on High Prairie. The wheat had an average stand of 65 percent but the more tender varieties were completely gone. The commercial fields of Hybrid 128 in Klickitat County had an average stand of 50 percent, but severe heaving made the chances still more dubious for a harvestable crop in many fields.

Estimates on winter survival of representative varieties and selections are given in the following table. They comprise about 25 percent of the total in the plot.

Winter survival of wheat varieties on High Prairie, Wash., sown Sept. 2, 1932, emerged on or before Sept. 27, 1932.

Variety	C.I.No.	Estimated stand	General condition
Hybrid 128 1/	4512	60-70	Poor to fair
Tenmarq Kans. 2670	10089	75	Good
Tenmarq Kans. 296548	--	80	Good
Kanred x Marquis Ks.285111	--	85	Good
Kanmarq	6937	70	Good
Holland	11389	0	Dead
Eaton	4682	0	Dead
Kanred x Marquis (Row No.89)	--	65	Fair
Kanred x Marquis(Row No.92)	--	5	Dying
Fortyfold x Federation (1933 A 3-1-1-1-2)	--	0	Dead
Albit x Hohenheimer (F4)	--	65	Fair
T. N. 1044 (Ohio)	--	60	Fair
Hybride de la Paix	7328	0	Dead
From China	10295	2	Dying
Do.	10857	0	Dead
From England	11212	40	Poor
Do.	11214	55	Fair
Do.	11215	0	Dead
Do.	11234	0	Dead

1/ Replicated 12 times.

The winter cereals in the plot on acid sandy loam soil in the Alsea River Valley, Lincoln County, Oregon, were severely injured by the December and February freezes. Grey winter oats, Holland and almost all of the winter wheats were killed outright. Winter spelt showed 10 percent survival and Alstroum spelt a slightly higher survival. The soft red wheats from the Ohio Agricultural Experiment Station showed a stand of 80 to 90 percent and were in fair condition; they are the only cereals that have escaped severe injury. Even the weeds and native grasses were killed out and at this date (April 6) are only just beginning to appear. The deer and other wild life depending on native grasses were suffering.

The plot on the east farm at Corvallis (sandy loam soil) that was inoculated with Cercosporella-infested soil looks better than any of the other plots, the stand of wheat averaging 75 percent. Winter oats and much of the winter wheat in the Willamette Valley were killed out.

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin)(April 1) The sowing of spring grain varietal experiments in field plots was completed on March 9. The nursery was sown on March 15. Emergence is about 100 percent. The minimum temperature since the grains were sown was 24° and the maximum was 62°. The rainfall in March amounted to 1.42 inches.

Stands on the plots sown in January are very poor because of crusted soil surface and the cold weather. In most cases farmers who sowed wheat in January are having to resow now. Only 9 of the 17 winter wheat varieties sown in the varietal trial in field plots last fall survived the winter with stands sufficiently complete to leave intact. The other plots have been filled in with spring grain. All barley was killed.

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens) (March 15) Ground is being prepared for seeding. Most of the winter wheat is out completely. Tillage and rotation plots will have to be resown. A few of the Turkey varieties will be left. The stands in the winter-wheat varietal experiments will range from 20 to 40 percent of normal. Only a very few varieties are left in the winter-wheat nursery and their stands are thin. Every white wheat is 100 percent killed. A few strains of Turkey may have as much as a 20 percent stand, and a few others like Minturki, Minhardi, and one or two hybrids have perhaps 30 to 40 percent stand.

The soil lacks moisture. It is especially dry in the south end of the county. There is hardly enough moisture in the ground to allow satisfactory plowing.

A number of farmers intend to leave their thin stands of winter wheat, but most of them will reseed with Federation. On the Station there is a 4-acre block of Oro wheat that is O. K. In another location, however, the same variety was almost completely winterkilled.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (April 1) The snow covering melted in the valley on March 28. The winter-wheat nursery came through the winter in excellent condition with good stands and no trace of winterkilling. Spring seeding probably will commence in a few days if the clear weather continues.

The mean temperature in March was 35°, and the precipitation totaled 0.93 of an inch. There has been very little moisture since August 1932.

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel) (April 4) No precipitation was recorded in March. The last frost of the month, probably also the last of the season, occurred on March 6.

Several varieties of barley and wheat headed the last week in March. Most of the varieties probably will not head for the next two weeks.

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C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

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Vol. 25 April 25, 1933 No. 5
Personnel (Apr. 11 to 25) and Field Station (Apr. 1 to 15)

PERSONNEL ITEMS

Mr. Chas. E. Chambliss left Washington on April 12 for points in Georgia, Florida, and South Carolina to confer with officials of State agricultural experiment stations and others interested in the growing of rice, particularly the Patna variety. He will return to Washington about the end of April.

Dr. J. H. Martin left Washington on April 19 for Brookings and Chamberlain, S. Dak., to assist in field experiments with osteodenic grain.

Messrs. S. C. Salmon, K. S. Quisenberry, and J. W. Taylor spent April 17 examining the winter-hardiness nursery and the smut nursery at Kearneysville, W. Va., a branch of the West Virginia Agricultural Experiment Station.

Dr. L. R. Waldron, plant breeder at the North Dakota Agricultural Experiment Station and collaborator with this Division, has been elected a fellow of the Linnean Society of London, an international honor in the field of science.

MANUSCRIPTS SUBMITTED

17. A Physiologic Form of Septoria tritici on Oats. Roderick Sprague. April 11, Phytopathology.

18. Diplodia Ear Rot in Inbred and Hybrid Strains of Sweet Corn. Glenn M. Smith and John F. Trost. April 11. Phytopathology.

19. Control of Stem Rot of Rice by Burning Stubble. E. C. Tullis, J. B. Woods, and Deane G. Carter. April 13, Jour. Agr. Engin.

20. Carbohydrate and Nitrogen Relations in Wheat Plants with Reference to Type of Growth under Different Environmental Conditions. A. M. Hurd-Karrer and A. D. Dickson. April 18. Plant Physiol.

21. Corn Culture. F. D. Richey. April 19. Farmers' Bul.

22. The Spermatia of Flax Rust, Melampsora lini (Lk.) Desm. Ruth F. Allen. April 21. (Note) Phytopathology.

23. Wheat Production in Colorado. D. W. Robertson, Alvin Kezer, J. F. Brandon, J. J. Curtis, Dwight Koonce, and Wayne W. Austin. April 21. Colo. Agr. Expt. Sta. Bul.

RECENT PUBLICATIONS

Sorghums for Grain and Forage. B. F. Kiltz, John B. Sieglinger, W. M. Osborn, B. F. Barnes, and H. H. Finnell. Okla. Agr. Expt. Sta. Bul. 210, 47 p., 6 figs. February 1933. (Cooperation between the Divisions of Cereal Crops and Diseases and Dry-Land Agriculture and the Oklahoma Agricultural Experiment Station.)

Improved Modification in the Columbia Drill. R. W. Woodward and D. C. Tingey. (Note) Jour. Amer. Soc. Agron. 25(3): 231. February 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Utah Agricultural Experiment Station.)

A Readily Removable Label Holder for Nursery and Advanced Plats. D. C. Tingey and R. W. Woodward. (Note) Jour. Amer. Soc. Agron. 25(3): 231-233, fig. 1. March 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Utah Agricultural Experiment Station.)

Reaction of Varieties and Hybrids of Wheat to Physiologic Forms of Bunt. E. F. Gaines and W. Z. Smith. Jour. Amer. Soc. Agron. 25(4): 273-284, figs. 1-2. April 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Washington Agricultural Experiment Station.)

ADMINISTRATIVE NOTE

Under date of April 8, 1933, the Solicitor for the Department of Agriculture rendered the following opinion:

"It is, therefore, my opinion that the salary of a Federal employee is exempt from taxation by the State".

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (April 13) The total rainfall in March was 6.33 inches. This is nearly five times as much as was recorded in 1932. The precipitation on March 6 amounted to 3.67 inches. The frequent rains prevented field operations and early sowing of all grains.

The temperatures in March were about normal.

On account of bad weather and financial conditions farmers accomplished very little field work. The present indications are that there will be a great reduction in the rice acreage in the southwestern part of the State.

Work on the Station progressed nicely. Corn was planted in varietal, date-of-seeding, and rotation plots. Rices were sown in date-of-seeding plots. The early seedings are up to a very good stand.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)[April 15] The weather of the first half of April has been open and favorable for growth of all crops. The maximum temperature was 92°; minimum, 33°. No precipitation has been recorded.

All small grains have made rapid growth during the last two weeks but are now beginning to need more moisture. Nebraska No. 28 wheat is showing first heads. Some barley that survived the winter is starting to head. Strong winds have dried the moisture. Leaf rust has gained some headway but is not injuring wheat to any great extent as yet.

A second sowing of flax was made recently. Grain sorghums and legumes were planted and cotton planting will start shortly. Severe winds occurring in the Panhandle of Texas appear to be further reducing the small wheat crop in that section.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (April 15) The weather was generally cold during the first half of April. The maximum temperature was 51° on April 14; minimum, 11° on April 9.

Several inches of snow fell on April 8. The total precipitation during the first half of April was 0.76 of an inch. The snow melted very slowly, with practically no runoff. Some snow still remains in sheltered places.

Sod land for the flax nursery on clean soil was plowed April 6. Since then the ground has been too wet for further field work. Moisture conditions are more favorable than usual at this time of year.

The germination seed tests for plot experiments were satisfactory. Seed for plot and nursery experiments is nearly all ready for sowing.

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens) (April 16) In eastern Oregon the spring is cold and backward. At Moro there were 19 days in March with minimum temperatures of 32° or lower. So far in April there have been 9 days with freezing temperatures at night, a minimum of 23° being recorded on the night of the 7th. There has been no precipitation in April to date.

Severe winterkilling of fall-sown grains occurred in eastern Oregon. About 90 percent of the winter wheat and all the winter barley has had to be resown. Most of the injury was done in December 1932, when cold, dry weather prevailed from the 7th to the 17th. The lowest temperature reached during this period at Moro was 6° below zero. Further injury was done to wheat during a week of cold weather in February, when a minimum of 12° below zero was recorded at Moro.

In the plot varietal experiment, all white wheats were 100 percent winterkilled. The following table gives the percentage of winterkilling in the red wheats:

Variety	C. I. No.	Winterkilled Percent
Oro	8220	53
Kanred	5146	49
Turkey (Kans.373-141)	11424	77
Turkey (selection)	11425	95
Turkey (local)	4429	79
Kharkof	1442	55
Kharkof	8249	69
Rio	10061	80
Cheyenne	8835	71
Turkey	1571	78
Ridit	6703	90
Blackhull	6251	100
Marquis x Kanred	11423	90

More than 200 wheats were included in a nursery varietal trial, but most of them were completely winterkilled. Only the following varieties were winterkilled less than 50 percent:

Turkey	C. I. No. 1558A
Durabel	C. I. No. 8860
Minhardi	C. I. No. 5149
Minhardi x Minturki	C. I. No. 8215
Minard x Minhardi	C. I. No. 8218
Minard x Minhardi	C. I. No. 8888
Minard x Minhardi	C. I. No. 8889

Both the plot and nursery trials were reseeded early in January. A fair stand of most varieties was obtained in the plot trials, but nearly all varieties in the nursery failed to emerge.

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C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture

(NOT FOR PUBLICATION)

Vol. 25. May 10, 1933 No. 6.
Personnel (April 26-May 10) and Field Station (April 16-30)

PERSONNEL ITEMS

Dr. H. B. Humphrey left Washington on May 7 for points in Georgia, Florida, Louisiana, Arkansas, and Texas to take notes on the cooperative cereal-rust nurseries.

MANUSCRIPTS SUBMITTED

24. Differential Varietal Responses of Winter Wheat to Time of Planting. C. A. Suneson and T. A. Kiesselbach. May 2. Jour. Amer. Soc. Agron.

RECENT PUBLICATIONS

Inheritance of Bunt Reaction and Other Characters in Hope Wheat Crosses. J. Allen Clark, K. S. Quisenberry, and LeRoy Powers. Jour. Agr. Research 46(5): 413-425, figs. 1-2. March 1, 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Montana Agricultural Experiment Station.)

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Office of Chief of Bureau

May 3, 1933.

B. P. I. Memo No. 708.

MEMORANDUM FOR HEADS OF DIVISIONS

Gentlemen:

In view of the present economic conditions and the large number of people with inadequate means of support, it becomes highly desirable that employment, in so far as is practicable, should be distributed to those who alike are competent and in need. No temporary employment of members of the families of our regular staff will be approved. This prohibition applies equally to employment under letter of authorization. Any recommendations submitted on which there would appear to be any question should contain full information in regard to any relationships to other employees. It is not intended that the Bureau should employ people not thoroughly qualified for the work to be done, but among those qualified it is desired that every effort be made to employ those first who are in need and have dependents.

Very sincerely,

(Signed) Wm. A. Taylor

Chief of Bureau.

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FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

GEORGIA

Coastal Plain Experiment Station, Tifton (Corn Breeding, H. S. Garrison)(May 3)
The cold wet weather in April considerably delayed the seeding of spring-sown crops in this section. The corn-breeding material was planted on April 18 and 19 and the yield test on April 29 and May 1.

The small grains, especially barley and oats, are beginning to ripen. Rusts are prevalent on all susceptable varieties of small grains. This is especially true of crown rust on Fulghum oats.

The total rainfall from January 1 to April 30 was 20.25 inches, and was well distributed over that period.

ARKANSAS

Rice Branch Experiment Station, Stuttgart (Rice Production and Improvement, C. R. Adair)(April 26) The outlook for fall-sown oats on the Station is not promising. A severe crown-rust epidemic is developing. Crown rust was first noticed about April 20 and since then has been developing rapidly. Some of the hybrids sent here from Tifton, Ga., last fall apparently contain plants that are free from crown rust. Practically all of the fall-sown oats are beginning to head. Fulghum (C. I. No. 708) is now about fully headed, Lee is just starting to head, and the Winter Turf strains are in the boot. Until last week, indications were that an average crop of oats would be harvested, but because of the crown-rust epidemic now developing yields will be decidedly below the average.

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)(April 20) In general the season here is approximately two weeks behind normal, but plantings have been maintained only five days behind normal. In normal seasons the date-of-seeding experiment with oats and barley usually has been made on April 1, 15, and 30. This year these seedings are being made on April 8, 19, and 29. The only spring-sown crop coming up as yet is a small plot of spring wheat sown on April 4.

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy) (May 1) All oat hybrids grown in rod rows for yield determination were sown at the agronomy farm on April 12. Single-plant selections and other material grown in 5-foot rows for determination of reaction to crown rust and other diseases were seeded at the plant pathology plots April 18 and 22. All seedings have emerged but development has been greatly retarded by unfavorable cold, dry weather. Oats are now more than two weeks behind their normal stage of development.

The winter-wheat rust nursery came through the winter with very slight evidence of winterkilling. A trace of leaf rust in the uredial stage was observed on May 1. Septoria tritici is farily prevalent.

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson) (April 29) Weather conditions this spring have been favorable for seeding the experimental plots. The precipitation is normal. The weather during the past week has continued cool and clear. The sowing of spring grain has been completed and planting of corn will begin next week.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus)(May 2) The weather during the winter was unusually severe. The ground and roads were covered with ice and snow most of the time. It was extremely cold in February, a minimum temperature of -28° having been recorded on the 8th. Winter wheat is almost completely winterkilled, probably having been smothered by ice. Winter rye survived with good stands.

Winter-wheat varieties survived the winter in good condition at the Waseca Experiment Station, about 80 miles south of University Farm.

The weather in April, with the exception of the last week, was cold and dry. The maximum temperature for the month was 74° on the 23rd, the minimum was 28° on the 11th. The precipitation totaled 1.43 inches.

Seeding of the spring cereals started on April 18 and has been completed. The varieties in the spring-wheat nurseries and plots have emerged with good stands.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)[May 3] The maximum temperature in April was 92°; minimum, 33°. The precipitation totaled 2.24 inches.

There was no rain in April until the 19th and unusually heavy winds dried out the surface soil. Small grains made fair growth. During the last 10 days of the month all small grains have grown rapidly. Nebraska No. 28 wheat began heading about April 15 and several medium early varieties are now heading. Frazier oats is showing first heads and winter barley is fully headed.

Corn made poor growth during the first part of the month but is now growing rapidly.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(May 1) The maximum temperature in April was 90° on the 18th; minimum, 27° on the 6th. The precipitation totaled 2.42 inches, of which all but 0.03 fell during the latter half of the month.

The weather of the first part of April was warm and dry, and winter wheats were showing marked effects of the prolonged drought before the rains. The earliest varieties started to head during the dry weather. The appearance of all varieties has improved greatly since the rain. Nebraska No. 28 and Early Blackhull are fully headed and several other varieties have started to head. No leaf rust has yet been noticed.

One of the worst sand and dust storms in recent years in this section occurred last Saturday. It is probable that fields of spring oats were injured.

The demand for seed indicates that much of the blown-out wheat acreage in the Oklahoma and Texas Panhandles will be seeded to grain sorghums this June. A large part of this demand is for seed of Wheatland, a combine type of milo developed at the Woodward Station.

KANSAS

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (May 2) The weather of early spring has been extremely dry with occasional high winds and dust storms. It also has been rather cool, although April temperatures were about normal. The first good rain in several months fell on April 20 and 21. Although some rain fell in most of the State at that time, it came too late to be of much benefit to wheat in western Kansas. In that area poor fall germination followed by an extremely dry winter and soil blowing in the spring had already destroyed much of the crop. The last dust storm occurred on April 29. A terrific southwest wind carried thousands of tons of red dirt from Oklahoma and Texas and deposited it in a thick blanket over Kansas and Nebraska.

These high south winds are undoubtedly carrying leaf-rust spores northward, since an abundance of rust is present in northern and central Texas. However, extremely dry weather with dewless nights and cool temperatures have prevented rust development on Kansas wheat so far. There is no rust on winter wheat in the vicinity of Manhattan. Mildew is severe in the rust nursery sowings but is very light elsewhere. Septoria leaf blotch is less prevalent and not so severe as usual at this season.

Sowings of both winter and spring cereals are making favorable growth at Manhattan, but rain is needed. Winter wheat is beginning to joint and probably will head somewhat shorter than usual. Estimates on the probable production of winter wheat in Kansas this year vary greatly, but it is fairly generally agreed that the yield will be not much more than one fourth of the record 240 million bushel yield of 1931.

Greenhouse experiments are now being brought to a close as rapidly as possible. High temperatures under glass from now on will prevent further work until fall. In the leaf-rust project, seedling-rust studies and physiologic-form determinations have been completed. Studies on hybrid plants, the inheritance of resistance, maturative resistance, and the effect of leaf rust on the water economy of wheat are nearing completion. At present an intensive hybridization program is in progress. Many new crosses have already been made looking torward increasing the leaf-rust resistance of good hard wheats and improving the quality and yield of leaf-rust-resistant soft wheats.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis) (May 1) The weather of the first part of April was dry and very windy. Winter wheat suffered from the severe winds. After April 20 rains were plentiful, the precipitation for the month totaling 4.58 inches.

All plots of spring wheat, oats, and barley have emerged with excellent stands, and the present supply of soil moisture is favorable for good crops.

The winter wheat plants are small. Stands are fair on fallow and poor on cornland.

The maximum temperature in April was 77° on the 18th; minimum, 12° on the 13th.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon)(Boyd Faulkner)(April 29) Winter-wheat varieties grown on fallow survived the winter in excellent condition, but those grown on stubble were completely killed. All nursery material is in good condition with the exception of the winter-wheat rust and smut varieties, which were grown on irrigated bench land. These were badly injured by low temperatures and strong winds late this spring. All spring

grains have now emerged. Corn planting will begin within two weeks.

A rainfall of 5.63 inches during one week in April returned moisture to the extremely dry soil to a depth of between three and four feet. Very little run-off or erosion occurred.

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (April 28) The weather in April has been cool and dry. The precipitation since January 1 has totaled 2.55 inches.

Wheat is backward and will probably head a week or more later than it did last year. Only moderate to slight winterkilling occurred at the Station. The ultimate survival was apparently increased by timely rains in March. Very striking differences in vigor, still apparent, are believed to reflect freezing injury effects which were not lethal. Heaving was not a factor since the soil was never very wet during the winter.

Spring grains on the Station emerged about April 15.

The writer had an opportunity to observe the condition of winter wheat in much of the State during the second week in April in connection with the annual spring trip to Alliance to take notes on nursery and field plots. Experimental wheat at Alliance had survived the drought, cold, and soil blowing exceptionally well, survivals of the more adapted varieties being generally above 60 percent. Few farm fields in the area averaged more than 10 percent survival -- a condition generally applicable to the western third of the State. Wheat drilled between corn rows seemed superior to that sown by any other method; it was even better than that in the limited number of fields observed that had been sown with a furrow drill. The drought in western Nebraska has been broken, 3.78 inches of rain having fallen at Alliance and as much as 5 inches at other points. This will encourage sowing of spring grains.

In central and eastern Nebraska only slight to moderate winterkilling was observed, but the wheat crop is backward. The general appearance suggests that fall seeding was delayed about two weeks beyond the optimum date, but this is merely the effect of an unusually cold fall which prevented normal plant growth.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden) (May 1) Field work on the Station has gone forward with but little interruption from bad weather since the last week in March. The field plot varieties of small grain were seeded during the last week in March. Seeding of practically all rod-row nursery material was completed the first week in April. All seedings emerged with good stands even though there was no rain.

The outlying uniform yield nursery at Frederick was sown on April 12, but the sowing of the other outlying nursery at Webster had to be postponed until the 19th because of winter weather and the frozen soil of the higher elevation at the latter location.

Approximately 3,000 head rows of wheat, oats, and barley sown since the middle of April have not emerged as the soil was too dry. However, nearly an inch of rain on April 29 and 30 should cause germination within the next few days.

The winter wheats in both nursery and field plots killed out almost completely, and most of the land has been worked up and reseeded to other crops after recording the spring survivals. An increase plot of Yogo winter wheat and a winter-protection experiment with the same variety was considered worth saving.

Plowing for corn will start on the Station this week.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (April 29) Sowing of the wheat, oats, and barley varieties in plots and of the rod-row nursery material was completed on April 20 and 25. Seeding this year was from 3 to 6 days later than in 1932, because after a snowstorm on April 8 five and one-half inches of snow lay on the ground for about a week. First emergence of varieties in plots was noted on April 29.

Survival notes in the uniform winter-hardiness nursery were low. The average spring survival notes ranged from 0 to 4 percent. Eight varieties were killed completely and seven others showed only a trace of survival. Minhardi (C. I. No.5149) and Lutescens (C. I. No. 8896) had the highest average survival.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)(May 2) The temperatures during the last half of April were a little above avera for this time of year. The maximum was 81° on the 16th; minimum, 22° on the 25th. Only 0.10 of an inch of precipitation was recorded during this period. Winds were more severe than usual and caused some soil blowing.

The corn and fallow land for flax was duckfooted and the plowed land was disked April 21. Final preparation of the flax nursery land was made April 29. The land was marked May 1 and the first sowing of the seed-treatment experiment was made May 2. Most of the flax nursery and varietal plots probably will be sown this week.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(May 1) The last seeding in the hybrid smut nursery and the first in the flax-seed treatment experiment were made today. The sowing of field and nursery plots of wheat, oats, and barley is finished. The first emergence was noted today. Flax, corn, and proso will be sown a little later.

Cold, misty weather and a few snowsqualls delayed seeding about a week or 10 days.

Because of the abundant snowfall last winter, soil moisture conditions have been good, although the April rainfall was considerably below normal.

Stand notes taken in field and nursery plots of winter wheat show a high percentage of winterkilling, due probably to the October blizzard and subsequent cold weather which prevented germinating grain from becoming firmly rooted before winter began.

It is reported that there are considerable grasshopper eggs in this part of the State.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(May 1) Seeding is progressing very satisfactorily. About one-half of the nursery ground has been planted. The wheat field plots were sown on April 28. Spring was backward in April and only the absence of late snows permitted field work to begin as near as it did to the normal date. The nursery seeding was begun April 25. Sixteen-foot rows are planted by two men with a Columbia planter at the rate of about 250 rows per hour, and 5-foot rows about twice as rapidly.

The precipitation during April was light, and moisture will be needed soon.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) [May 2] Soil moisture conditions, which had reached a low level by the 1st of April, were restored to normal by a snowstorm that started on the 3rd and continued intermittently to the 18th. The minimum temperature of -4° caused no injury to crops because of the ample snow protection. The precipitation for the month, mostly in the form of snow, totaled 3.01 inches.

Seeding of spring grains was started on April 24, about a week later than the first seeding date of the last two years. Most of the seeding on the Station was finished by the 29th.

The maximum temperature was 68° on the 22nd, 25th and 28th; minimum; -4° on the 9th.

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines) (O. A. Vogel)(April 18) A large part of the fall-sown wheat in eastern Washington failed to survive the winter. It is estimated that only 5 percent survived in Walla Walla County and not more than 50 to 60 percent in Spokane, Franklin, and eastern Lincoln counties where the injury has been less severe than elsewhere. Nearly all wheat on the northern and eastern slopes near the hilltops is dead. Reseeding, particularly in Walla Walla and Columbia counties, has delayed summer fallow operations as much as 30 days.

Killing was sufficiently severe in the fall-sown nurseries to supply valuable information regarding relative survival. In most cases varieties such as Turkey and Oro survived 90 to 100 percent, whereas less hardy varieties such as Fortyfold, Federation, Golden, etc., were completely killed or badly injured. It should be possible to make many eliminations this year on the basis of winterkilling.

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin)(May 1) The weather of the first three weeks of April was cold and plant growth was practically at a standstill. A recent warm spell now is causing the plants to develop nicely. Lack of moisture was causing great anxiety because spring grain constitutes much of the crop this year. However, 2.0 inches of rain fell on April 29 and 30, bringing the total for the month up to 2.18 inches, about 1.0 inch above the average for the years 1929 to 1933. Rainfall for the crop season to date also is normal. Prospects for a good crop of spring wheat now depend largely on the precipitation during the first part of June. Stands of spring grain are excellent and are free from weeds. Yields of fall-sown wheat probably will be low, as the stands are thin and weedy.

Several hundred newly shorn sheep died from exposure during the recent rain.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (May 1) The weather of the first week of April was clear and warm, enabling most of the seeding to be done in the nursery. A week of rain and snow followed during which little work could be done outside. The remainder of the nursery

and the plots were seeded by the 18th and everything emerged between April 22 and 24. Since that time the weather has been warm and sufficient rain has fallen to insure rapid growth. On April 29 a 20-hour rain totaled 0.94 of an inch, one of the heaviest rains recorded in one day for some years. The total precipitation for April was 2.28 inches.

S P E C I A L

FISCAL NOTE

It now seems likely that all unpaid obligations (including checks issued before but paid by the Treasury after June 30) will be charged to funds available for the Fiscal Year 1934. Special effort should be made to submit all vouchers promptly. Necessary purchases should be made by June 1 if at all possible and vouchers should be sent to Washington immediately.

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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 25 May 25, 1933 No. 7

Personnel (May 11-May 25) and Field Station (May 1-15)

PERSONNEL ITEMS

Mr. B. B. Bayles left Washington on May 23 for points in Arizona, California, Oregon, Washington, Utah and Idaho to observe and plan wheat experiments and to confer with Division employees and cooperating officials.

Dr. J. A. Faris left on May 23 for Leavenworth, Kans., where he will spend about 3 weeks taking data on cooperative wheat flag smut experiments.

Dr. C. S. Holton, who has been conducting research in stinking smut in the Division greenhouses and laboratories in Washington and at the Arlington farm, left for his headquarters at Pullman, Wash., on May 23. En route he will stop at points in Kansas to take notes on flag smut.

Mr. H. H. McKinney spent the week from May 11 to 18 in Illinois in the interests of cooperative wheat-mosaic investigations.

Dr. K. S. Quisenberry left Washington on May 25 for points in Texas, New Mexico, Colorado, Oklahoma, Kansas, and Nebraska and later to the Northern Great Plains States to observe and plan wheat experiments and to confer with Division employees and cooperating officials.

MANUSCRIPTS SUBMITTED

25. Cercosporella Foot Rot of Winter Cereals. Roderick Sprague and Hurley Fellows. May 12. Tech. Bul.

26. Yields of Barley in the United States and Canada 1927-1931. H. V. Harlan, P. R. Cowan, and Lucille Reinbach. May 23. Tech. Bul.

27. The Effect of Leaf Rust (Puccinia triticina) on the Yield, Physical Characters, and Composition of Winter Wheats. Ralph M. Caldwell, H. R. Kraybill, J. T. Sullivan, and Leroy E. Compton. May 25. Jour. Agr. Research.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)(May 19) Weather conditions in April were about normal. The maximum temperature was 90°. The total precipitation was 4.26 inches.

Heavy rains during the first two weeks greatly delayed farm operations. The indications are that a much greater portion of the rice crop will be sown in May than has been the case in recent years.

Seeding operations proceeded satisfactorily on the Station. Most of the rice plots have been sown. If weather conditions permit, seeding will be completed during the first week in May.

Rice and corn in the date-of-seeding plots are up to a good stand and are growing nicely.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(May 15) The weather of the first part of May was favorable for all crops except small grains. Continuous drying winds from the 5th to the 12th, inclusive, dissipated the moisture so that all small grains suffered materially. At times the wind reached a velocity of 20 to 30 miles an hour. No precipitation was recorded in May until the night of the 14th when 2.29 inches fell. This rainfall will greatly benefit the grain. Temperatures during the period were about normal, with a maximum of 95° on the 8th.

Nearly all grain in the advanced wheat and oat nurseries was headed by the 15th. The hard-wheat nursery is just starting to head. Prospects for a crop were greatly improved by the recent rain. Leaf rust has become very prevalent but has not injured any except the most susceptible varieties. Stem rust has not appeared. A small amount of loose smut was present in a number of plantings on the Substation but was rogued out each morning.

Reports from Amarillo indicate that the nursery there is in fairly good condition but that the varietal test is of little if any value. There was a good rain in that section on May 5th.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(May 16) The maximum temperature during the first half of May was 92° on the 10th; the minimum was 41° on the 2nd. The precipitation totaled 0.87 of an inch.

Winter wheats, which in late April and early May were relieved from a long period of drought, are again in need of rain. If it does not rain soon yields will be materially reduced. The later varieties are nearly fully headed, and Nebraska No. 28 and Early Blackhull are in the soft-dough stage. Leaf rust was noted on May 11 for the first time this season, but infection as yet is light. The early varieties of spring oats and spring barley in the nursery have started to head.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis) (May 16) The rainy weather of late April continued through the first two weeks in May. A total of 2.73 inches of rain has fallen during the first 15 days of May, and 6.99 inches since April 20. The rainfall has been gradual and there has not been enough runoff to fill the ponds. Needless to say, the agricultural outlook in this region is bright.

Winter wheat is small and very thin. Oats, barley, and spring wheat are growing rapidly. Corn planting in this section has started.

The maximum temperature for the first half of May was 68° and the minimum 31°.

NEBRASKA

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (May 15) The weather continues cold and backward. Rain totaling 3.34 inches has fallen since April 28.

Rye is beginning to head. Wheat continues to show the effects of late winter freezing. At this stage of development it appears that the most hardy varieties will yield almost twice as much as the less hardy varieties despite an actual spring survival difference of only 15 to 20 percent.

Hessian fly are conspicuously absent this year, even in the epidemic nursery. Chinch bugs are unusually numerous.

Reports from Alliance, Nebr., indicate extremely favorable conditions for spring grains there, as the rainfall for the past month was over 7 inches.

A crop field day will be held at this Station on June 28.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (May 16) The emergence of wheat, oats, and barley varieties in plots and rod rows was slow and irregular this spring because of the cool weather and dry surface soil. A rain of 0.51 of an inch on May 7 wet the surface soil sufficiently to cause germination of nearly all the seed.

Wheat, oat, and barley varieties in triplicated 50th-acre plots emerged on April 29 and 30. Nursery material in rod rows was first emerged on May 1. Space-planted inheritance material sown May 1 did not emerge until May 13.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (May 17) The weather during the first week of May was cool and dry and was unfavorable for germination and plant growth. The drought was broken on May 7 by a little over a half inch of rain.

The 17-foot row nursery was sown May 3 and the bulk of the nursery and the increase plots during the next few days. The varietal plots in triplicate were sown May 9, as soon as possible after the rain. The second sowing of the seed treatment experiment was made May 16. Nearly all the flax sowing is completed with the exception of the final sowing of the seed-treatment experiment and the material for study of rust infection to be sown June 1. The seed-treatment experiment sown on May 2 began to emerge on the 13th. The varietal plots in triplicate, the increase plots, and all nursery rows sown before the rain on May 7 are emerging today, apparently with good stands.

Plant growth has progressed rapidly as a result of the warm weather of the last few days.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(May 16) The weather of the first half of May was cool and cloudy. Frequent showers delayed field operations. The total precipitation was slightly less than an inch. Hot weather for the past two days has caused rapid growth of crops.

The seeding of small grains in the vicinity is about completed and the planting of corn has begun.

Flax varieties were sown at the Substation on May 15 under fairly good moisture conditions that should insure good germination. Seed corn is being prepared for both field plots and nursery and it is planned to plant both this week. Stand notes are being taken, showing rather uniformly good stands of spring wheat, oats, and barley.

Mr. Robert L. Shotwell, government entomologist, is temporarily located at the Substation, making a survey of grasshopper conditions in this district.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(May 16) The backward spring weather has continued till today when the temperature has risen above 80° for the first time this year. Pastures are yet inadequate to carry cattle and horses, although sheep have been able to maintain themselves on pasture for some time.

Seeding is about as far along as normally, although early sown grain has been slow in showing growth. Seeding of all small grains is being completed at the Substation tomorrow.

Wheat varietal field plots emerged May 10, 12 days after sowing, and the first nursery seeding emerged May 9, 14 days after sowing. Moisture seems to be sufficient for uniform stands, although the precipitation for the first half of May amounted to only 0.13 of an inch and only about an inch has been recorded since the first of February.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (May 15) The weather of the first two weeks of May was cold and wet. The precipitation totaled 2.00 inches. The minimum temperature was 29° but no apparent damage was done to the crops.

The bulk of the plots on the Station were seeded before the 1st of May and the remainder of the spring seeding is being pushed forward during the present favorable weather. Only a small percentage of the spring grain crop throughout central Montana has been seeded to date, but this work is also progressing rapidly.

Winter-wheat survivals in the varietal plots range from 0 to 100 percent, depending largely upon the amount of snow covering at the time of killing weather.

IDAHO

Agricultural Experiment Station, Moscow (Wheat Improvement, V. H. Florell) (May 20) The plots and nurseries sown to fall wheat are generally in good condition. Most varieties now are about 6 inches high. Rosen rye will soon begin to head. It is now about 15 inches high. Winter survival is good in most winter habit varieties in the plot experiment. Jenkin has a survival of about 30 to 40 percent. Fortyfold x Federation (Idaho No. 511), which has been one of the highest yielding varieties was injured to about the same extent as Jenkin.

In the winter-wheat nursery the winter-habit varieties show a survival of about 80 to 85 percent. The Fortyfold x Federation and Arco selections were rather badly damaged. Injury in these ranged from about 5 to 35 percent. In this sowing Jenkin was almost completely killed. Genro (Washington No. 2868) has a survival of about 25 percent.

Injury in the winter-wheat nursery was more severe than in the plot experiment. This probably is due in part to location. The plots are located on a north slope on fairly high ground, whereas the winter-wheat nursery is located about a mile distant on a flat where the altitude is considerably lower. The temperatures on the flat were probably 8 to 10 degrees lower during the severe cold spells than they were at the University Weather Station, which is but little higher than the plot experiment.

The spring cereals in the plots and nurseries have all been sown, with the exception of one or two small lots in the nursery. Most of these have emerged with excellent stands. There has been considerable rain with subnormal temperatures this spring, but the conditions should be very favorable for spring grain with a few more good showers later in the growing season.

The prospect for winter wheat in this locality is fairly good. The fields on the Palouse hills are beginning to green up fairly well. Most fields to the east are in excellent condition, while to the west they are not in quite such good shape. Snowfall during the past winter was unusually heavy. A total of 108 inches was reported. This came rather late in the season but at no time was it excessively deep on the ground since there was a good deal of thawing between

storms. On the hills to the west toward Pullman the fields are in fairly good condition but here and there wheat has been winterkilled on the hilltops. It is reported that around Genesee, about 20 miles south, considerable winterkilling occurred. Most of the injury apparently occurred during December at a time when there was very little snow covering. Temperatures of -9° were recorded at that time at the University Weather Station. In February temperatures of -18° were recorded. In February, however, the fields were fairly well covered.

The commercial fields of wheat that show good winter survival are those sown to winter habit varieties such as Albit, Hybrid 128, and Mosida. Farmers who have been growing Jenkin wheat find that their stands are badly injured and many will have to reseed. The acreage of Jenkin is relatively small, however. On a recent trip to Spokane winter wheat was observed to be in fairly good condition as far as Colfax, Wash. Beyond Colfax there appeared to be a good deal of winterkilling in some fields which were being entirely resown. Others were in fairly good condition.

ADMINISTRATIVE NOTES

I am advised that the Solicitor of this Department has given an informal opinion that persons employed to pick cotton on experimental plots on a piece basis, i.e., paid by the pound, are subject to the 1½% compensation deduction from their wages, effective April 1, 1933.

It appears desirable therefore that where persons are hired under conditions comparable to the above, pay rolls and subvouchers where cash payments are necessary, be rendered on a compensation deduction basis.

(Signed) W. P. Cox,

Assistant in Charge of Accounts.

DO NOT PURCHASE GOODS OF FOREIGN ORIGIN

Title III of the "Act Making Appropriations for the Treasury and Post Office Departments for the fiscal year ending June 30, 1934, and for other purposes", approved March 3, 1933 places definite restrictions on the purchase of articles, materials and supplies of foreign origin. The provisions of this section affect all purchases made subsequent to March 2, 1933, except those based upon contracts entered into Prior to March 3, 1933.

A certificate signed by the vendor as to the domestic origin of all articles or supplies purchased must accompany each Form 1034 voucher or Form 1012 voucher submitted in payment for the purchases.

If goods of foreign origin are absolutely necessary in conducting official work, all the facts on which to base an exigency statement should be submitted with the voucher. In making such purchases it should be borne in mind that they may fail of approval. The Washington office should be advised in advance whenever foreign goods are needed.

H. S. Smith.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 25 June 10, 1933 No. 8
Personnel (May 26-June 10) and Field Station (May 16-31)

PERSONNEL ITEMS

Mr. C. C. Fifield attended the meetings of the American Society of Cereal Chemists held in Chicago, Ill., June 5 to 9.

Mr. H. S. Garrison, stationed at the Coastal Plain Experiment Station, Tifton, Ga., conferred with members of the Division while in Washington from June 6 to 9 on leave during a vacation trip.

Messrs. M. N. Pope and J. W. Taylor inspected and harvested the cooperative barley nurseries at Manassas and Mattoax, Virginia, on June 7 and 8.

MANUSCRIPTS SUBMITTED

28. Sorghum Production in Kansas. H. H. Laude and A. F. Swanson. May 25. Kans. Agr. Expt. Sta. Bul.

29. Resistance of Wheat Varieties to Bunt at Moccasin, Montana, and North Platte, Nebr. J. L. Sutherland and N. E. Joden, May 26. Jour. Amer. Soc. Agron.

30. Inheritance of Stem-Rust and Bunt Reactions in Spring-Wheat Crosses. J. Allen Clark. June 5. Proceedings of the World's Grain Exhibition and Conference, Regina, Canada, July 24 to August 5, 1933

31. Heterosis or Hybrid Vigor in Oats. F. A. Coffman and L. L. Davis. June 5. Jour. Amer. Soc. Agron.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)(June 7) Station work progressed nicely in May. The weather was favorable for field work and germination of rice seed the first 20 days. Rice seeding was completed on May 6. April seedings are up to a good stand and most of the plots have been seeded.

All cultivated crops are up to a good stand and growing nicely.

The total precipitation of 5.50 inches fell on 10 days. Three rains were heavy enough to place considerable water in irrigation streams.

Temperatures were much higher than for May 1932. The maximum was 93°, the average mean, 82°.

Farmers made considerable progress in seeding rice the first two weeks of the month; but as they were already behind in their work, considerable seeding will extend into June, on account of the heavy rains the latter part of the month.

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson) (June 2) Winterkilling was very severe in the winter-wheat nurseries. Many of the relatively resistant varieties were completely killed

Continued wet, cloudy weather in May delayed sowing and field work. The precipitation totaled 9.36 inches.

Perithecial development of Gibberella saubinetii on cornstalks is unusually abundant in Indiana, Illinois, and Wisconsin.

The continued wet weather during the spring has resulted in an increased acreage of barley on disked cornland in these States.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus)(June 2) The weather in May was ideal for small grains. The plants have tillered profusely and made rapid growth. Stem rust was first found in the wheat rust nursery on May 25, as a result of hypodermic inoculation. No stem rust from natural infection has been observed or reported to date.

Corn planting as well as all other field work has been delayed because of excessive rain.

The temperatures in May were: Maximum 84° on the 17th; minimum, 34° on the 3rd. The precipitation totaled 7.87 inches, or 4.20 inches above normal.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)[June 4] Weather conditions in May in general were favorable for the maturing of small grain. Dry, hot winds during the first 10 days caused some injury, but they were followed by a rain of 2.29 inches on the 15th, and another of 2.07 inches on the 25th.

Wheat and oats are a desirable height as the result of late rains, but barley was so short that it was difficult to harvest. The barley varietal test was harvested on the 31st and the nursery is now being harvested. A few early wheat and oat varieties have been cut, but in general the harvest of wheat and oats will be a few days late. Stem rust of oats is doing considerable damage to fields but has not injured plots to a great extent. Stem rust of wheat is also doing considerable injury.

Dr. K. S. Quisenberry arrived on the 31st for inspection of small grain. On May 25 Mr. C. O. Johnston, of Manhattan, Kans., made observations on the cereal rusts. On May 19 a field day was held and about 300 farmers were present.

The maximum temperature was 95°F., the minimum, 47°. The precipitation totaled 5.22 inches.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(May 31) Weather conditions remain dry. The first date-of-seeding test of broomcorn was seeded May 29, but it is questionable whether it will emerge until a rain occurs. Even weeds have failed to make much growth to date.

The precipitation in May totaled 1.25 inches. The maximum temperature was 101° on May 19; minimum, 41° on the 1st.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(May 31) Winter wheats have suffered severely from drought in May. The earliest varieties soon will be ready to cut. Although the wheat project has a rather cooked appearance, a spring field day has been set for June 6.

Mr. C. O. Johnston, of Manhattan, Kans., was here on May 26 to take notes on uniform leaf-rust nurseries. Only a small amount of leaf rust was present.

KANSAS

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson) (June 1) The precipitation in May totaled 1.57 inches, compared to a normal of 4.28 inches for the month. Small grain and alfalfa need rain badly. Corn on the agronomy farm is up to reasonably good stands and has been cultivated once. Thus far it has not suffered from lack of water, but uneven patches are beginning to develop which probably are caused by areas of moisture deficiency.

Weather conditions in the State have been very spotted. Areas in eastern Kansas have had so much rain that stands of corn have been washed out and cultivation seriously interfered with. The western and south-central sections of the State remain very dry. General rains fell in April but were insufficient. Considerable damage has been done by the worst dust storms in years. Seed growers report heavy sales of corn and sorghum to replant abandoned wheat acreage, but much of the western area has insufficient soil moisture at present to germinate row crops, and practically no reserve of subsoil moisture.

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)(June 6) The writer visited the agricultural experiment stations at Denton, and Stillwater and Woodward, Okla., in the interest of cereal-rust investigations during the week of May 21. Leaf rust on both winter and spring wheat sowings was abundant at Denton and Stillwater, where sufficient moisture has fallen to insure normal crop conditions. At Woodward the very dry spring has greatly interfered with the normal development of rust. At all three stations stem-rust infection was greatly delayed by a late cold spring. Traces of stem rust were found on winter wheat at Denton and Stillwater, but none was present on oats at any station. Crown rust was likewise absent, except for traces on Markton at Denton.

In Kansas, May 1933 was one of the driest Mays on record with only light local rains to partially relieve a general drought condition. Wheat throughout the State is now being severely injured by high temperatures and hot wind. The maximum temperatures on June 4 and 5 at Manhattan were 106° and 103° F., respectively, that of June 4 being the highest temperature ever recorded for that date here. Nursery and plot sowings of winter wheat are rapidly drying up. Leaf-rust infection is very light and probably will not develop much further. Stem-rust infection is absent from both oats and wheat. Loose smut in late maturing Turkey type wheats seems to be increasing in the Central Plains area. Smut is again very prevalent in untreated Kanota oats in field sowings throughout the State. Many new smut-resistant selections of oats growing in the agronomy nursery seem very promising, however.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(June 1) Wheat, oats, and barley in the nursery and in plots are making rapid growth. Opportune rains have resulted in fairly uniform nursery stands. Rain fell on 13 days in May, totaling 1.83 inches of precipitation.

The minimum temperature in May was 29° on the 9th; maximum, 91° on the 31st.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)(June 1) The timely rains and moderate temperatures of the second half of May were exceptionally favorable for germination of seed and plant growth. Seeding of the rust-nursery material on May 31 and the final seeding of the seed-treatment experiment on June 1 completed the flax seeding for the season. All flax in plots and nursery rows, with the exception of the May 31 and June 1 seedings, has emerged with good stands. Trimming of plots and nursery rows, thinning of spacing experiment, setting of stakes, and one cultivation of all nursery sowings are also completed.

Wilt-susceptible varieties and hybrids came up with good stands in the flax-sick-soil nursery. Many plants are now wilting, following the warm weather of the last few days.

The perennial flax species are commencing to bloom.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(June 1) Temperatures were below normal during most of May, with the exception of a few hot days. The precipitation totaled 2.56 inches. The total since January 1 is slightly below normal, but, because of abundant snow early in the winter and low evaporation this spring, soil-moisture conditions have been better than in the average year.

All small grains are in good condition but are later than usual. Winter wheat is very thin and one replication of both field plots and nursery has been disked up to control the weeds.

The seeding of cereal experiments is completed, with the exception of proso and the date-of-seeding-experiments of flax.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(May 31) A 3-inch rain has considerably brightened crop prospects in this section. Much-needed pastures are coming along fine and the subsoil was benefited by the heaviest rain in three years. Seed in some of the nursery rows sown in dry soil has germinated about two weeks late, so stands are fairly good although ripening may be slightly uneven. The first cultivation and trimming of the nursery are in progress. Wheat varietal field plots have been trimmed and show very fine stands. Proso millet varieties will be sown next week.

The precipitation in May totaled 3.42 inches, more than an inch above normal. The mean temperature was 50.6 degrees.

Grasshopper eggs are plentiful and are hatching, but whether the

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (June 1) The weather of the last two weeks in May was cool and there were occasional showers. Most small grains have made satisfactory growth.

Seeding on the cereal project was completed May 25, when the last plots in the rate-and-date-of-seeding test were sown. The stands of all plots of spring grain are satisfactory.

The precipitation for May totaled 3.11 inches. Temperatures: Maximum, 87° on the 30th; minimum, 29° on the 11th and 12th.

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin)(June 2) In May the precipitation amounted to 1.54 inches. Rain fell on 16 days; there were only 11 clear days. Such conditions are unusual for this section but decidedly favorable for the growth of spring wheat.

Hot dry weather the last few days is causing spring wheat and other crops to wilt slightly, as the stands are very thick. More rainfall will be needed in June to produce maximum yields, although a fair crop probably can be produced with a soil moisture now available.

The maximum temperature in May was 83° F. The minimum was 30°. The temperature dropped to 32° or less on eight nights.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (June 1) Growing conditions were extremely unfavorable during the first 23 days of May. A total of 2.59 inches of moisture, largely in the form of snow, was recorded. Frosts occured on 6 nights from May 7 to 13. The maximum temperature was 87°; minimum 22°. Very little growth could be observed in the nursery during the cold period.

Much of the irrigated land of Cache Valley was not seeded until after May 25. Many fields remain to be seeded.

Since May 24 the weather has been ideal for rapid plant growth. Corn and grain-sorghum varieties emerged in about five days. The barley nursery is more promising than for several years.

The winter-wheat varieties appear weak and stunted, no doubt largely because of adverse weather. Stands are still good and some recovery may yet take place.

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BUREAU OF PLANT INDUSTRY

CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 25 June 25, 1933 No. 9
Personnel (June 11-25) and Field Station (June 1-15)

PERSONNEL ITEMS

Mr. J. Allen Clark spent June 14 and 15 studying wheat varieties in cooperative classification nurseries in the vicinity of New Brunswick, N. J.

Mr. Clark left Washington on June 21 to visit field stations in Minnesota, North Dakota, South Dakota, and Nebraska where cooperative wheat experiments are being conducted. He will study cooperative wheat classification nurseries and wheat breeding nurseries for rust and bunt and confer with officials of State agricultural experiment stations on cooperative experiments.

Mr. F. A. Coffman left Washington on June 14 on a trip in Missouri, Kansas, Colorado, Nebraska, Iowa, Wyoming, Utah, and Idaho, to record data on and assist in harvesting cooperative oat nurseries on agricultural experiment stations and farms. He will confer with cooperative officials and Federal and State employees and obtain plant material for study in the laboratory.

Mr. A. C. Dillman left Washington on June 20 for points in Minnesota, North Dakota, Montana, and Wyoming to study cooperative flax classification nurseries, particularly at St. Paul, Bozeman, and Mandan. He also will conduct agronomic and plant breeding experiments with flax in the States named.

Dr. Charlotte Elliott left Washington on June 17 for Bloomington, Ill., to study bacterial wilt of corn in the corn experiments cooperative with the Funk Bros. Seed. Co.

Dr. H. B. Humphrey spent June 16 and 17 taking notes on cooperative uniform rust nurseries at Independence, Va.

Mr. C. H. Kyle left Washington on June 18 for Tifton, Ga., where he will select and hand pollinate corn in the cooperative experiments. He will also confer with cooperating State officials on corn experiments.

Mr. H. H. McKinney left on June 10 for Baton Rouge, La., to inspect cooperative corn mosaic experiments and confer with cooperating State officials.

Dr. M. N. Pope left on June 24 for points in Illinois, Iowa, Wisconsin, Minnesota, North Dakota, and South Dakota to collect samples of malting barley and to confer with cooperating officials of agricultural experiment stations and with farmers and maltsters.

Messrs. M. N. Pope and J. W. Taylor spent June 14 to 17 inspecting cooperative barley nurseries and barley fields in Virginia and northern North Carolina.

Messrs. S. C. Salmon and J. W. Taylor spent June 12 in studying wheat varieties and methods of growing and harvesting wheat on the Eastern Shore of Maryland.

MANUSCRIPTS SUBMITTED

32. A Cytological Study of Heterothallism in Flax Rust, Melampsora lini. Ruth F. Allen. June 23. Jour. Agr. Research.

RECENT PUBLICATIONS

Bacterial Wilt of Corn. Frederick V. Rand and Lillian C Cash. U. S. Dept. Agr. Tech. Bul 362, 31 p., illus. May 1933.

Wheat's Rotation Use Is Largely Determined by Crop Competition. John S. Cole and S. C. Salmon. Yearbook of Agr. 1933: 153-156. 1933

Barley Acreage Is Increasing Because of Crop Feed Value. H. V. Harlan. Yearbook of Agr. 1933: 190-191. 1933.

Wheat is Attacked by Rusts, Smuts, and Other Destructive Diseases. H. B. Humphrey. Yearbook of Agr. 1933: 161-168, figs. 16-17. 1933.

Grain Sorghums Highly Drought Resistant; Many Varieties Grown in U. S. John H. Martin. Yearbook of Agr. 195-198. 1933.

Corn Hybrids Result From Crossing Carefully Selected Parent Lines. Frederick D. Richey. Yearbook of Agr. 1933: 182-190, figs. 19-22. 1933

Nearly 300 Varieties of Wheat Grown on United States Farms. S. C. Salmon. Yearbook of Agr. 1933: 147-153. 1933.

Oat Varieties Have Regional Adaptation; Remain Major Crop. T. R. Stanton. Yearbook of Agr. 1933: 191-195, fig. 23. 1933.

The Spermatia of Flax Rust, Melampsora lini. Ruth F. Allen. (Note) Phytopathology 23: 487. May 1933. (In cooperation with the California Agricultural Experiment Station.)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

IOWA

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy) (June 13) A severe heat wave during the past two weeks has caused considerable damage to an already late oat crop and has greatly retarded the development of all cereal rusts. Maximum temperatures have been well above 90° and often above 100°. The oat crop is now estimated at 80 percent of normal.

A splendid infection of crown rust and stem rust of oats has been initiated by artificially inoculating check plants with a hypodermic syringe. Weather conditions have been decidedly unfavorable, however, for secondary and later development of both rusts, and unless conditions change quickly infection in the nursery will be light. Early varieties of oats are now heading.

Wheat is maturing rapidly because of the excessive heat and lack of moisture. All varieties are heading and many are in the milk stage. Leaf rust is well distributed throughout all the plots. The maximum infection on the most susceptible varieties is about 30 percent. Stem rust on wheat has not yet appeared.

TEXAS

Texas Agricultural Substation No. 4, Beaumont (Rice Production and Improvement, H. M. Beachell) (June 13) The rice varieties in the nursery and field plots were sown from April 18 to 23. The plants emerged from April 28 to May 7. Emergence was uniform and stands in both nursery and field plots are very satisfactory. Nursery plots were sown with the Columbia planter and the stands were far superior to those obtained in the past two years from hand sowing. It was necessary to irrigate the land to bring the rice up. Both field and nursery plots have been flooded for some time, and the rice in the various experiments has a very good appearance. The rainfall during the month of May was slightly below normal.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(June 15) The weather of the first half of June has been drier than in the other dry months of 1933. Broomcorn planted May 29 emerged to fair stands but some was killed by the excessive heat of the first part of June. A second date-of-seeding test of broomcorn and a series of grain-sorghum varieties were planted June 14; it is questionable if these will emerge without rain. The prospects for summer crops in this county are becoming less as June continues without rain.

Maximum temperature for the first half of June, 109° on the 5th; minimum, 48° on the 14th. Precipitation 0.01 of an inch on the 4th.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(June 15) Except for late seedings in the rate-and-date experiments, winter-wheat varieties in the field plots have been harvested, and all except a few late varieties in the nursery are cut. Nearly all hybrid material has been pulled and stored pending examination. Winter wheat suffered severely from drought this season. The precipitation from July 1, 1932, to June 1, 1933, was 12.37 inches; this is only 62 percent of normal.

Dr. L. W. Boyle took notes on foot rot of wheat at the station from June 2 to 4. Dr. K. S. Quisenberry spent June 9 to 14 examining and working on the wheat project.

Since the plots were harvested with a combine, the yields of the 23 winter-wheat varieties grown in 1/47th-acre field plots have been calculated and are presented in the following table:

Average yield of winter-wheat varieties grown in quadruplicated 1/47th-acre plots at the Woodward Field Station, 1933

Variety	C.I.No.	Bu.per Acre	Variety	C.I.No.	Bu.per A.
Early Blackhull	8856	22.1	Fulcaster	6471	17.0
Cheyenne	8885	21.7	Turkey (Goodwell No.102)	--	17.0
Oro	8220	19.2	Tennara	6936	16.8
Kharkof	6686	19.2	Kawvale	8180	16.7
Superhard	8054	19.0	Kanred	5146	16.6
Local Turkey	--	18.5	Quivira	8886	16.2
Kharkof	1442	18.5	Cooperatorka	8861	16.0
Nebraska 60	6250	18.3	Redhull	--	15.9
Nebraska 28	5147	18.1	Eagle Chief	8868	15.6
Blackhull	6251	18.0	Sibley (Okla.No.81)	10084	15.6
Kanred x Marquis	10090	17.9	Denton	8265	15.5
			Harvest Queen	6199	15.2

KANSAS

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson) (June 15) The lack of rainfall thus far in June has aggravated drought conditions and has seriously injured alfalfa and small grains. The situation was made much worse by an unprecedented heat wave which was general over the State from June 4 to 11. The maximum temperature at Manhattan was 109°. Wheat, oats and barley which were just filling have been badly burned and crop prospects have declined materially since the official June 1 forecast.

Corn and sorghums in the eastern half of the State have not suffered materially from heat and drought thus far but are being injured by chinch bugs, which are worse than they have been in several years. Most fields are clean.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis)(June 16) The weather the first half of June has been warm and dry. Winter wheat, spring wheat, oats, and barley are beginning to show the effects of the dry weather. The earlier varieties of the small grains are fully headed. The corn varietal experiment and the sorghum varietal experiment have emerged to good stands.

Lytton W. Boyle, assistant pathologist, arrived at Akron on June 14. He will gather data on the occurrence of foot rot in the winter-wheat foot-rot nursery and the date-of-seeding winter wheat experiment.

The maximum temperature for the first 15 days in June was 95° on the 10th; minimum 46° on the 7th. The precipitation totaled 0.46 of an inch.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden) (June 15) The month of June opened with a high south wind and a maximum temperature of 102°F. Maximum temperatures around 100° or over prevailed from the 1st to the 10th. A rain of 0.21 of an inch on the night of the 10th brought some relief from the heat but was insufficient to be of much benefit to crops. There was a cool period from the 11th to the 13th. Another heat wave is on at present with no relief in sight. The station wheat plots on fall plowing have been beyond recovery for about a week. The plots on corn ground will be burned up by the end of this week. But there is still hope for the plots on fallow if rain comes by the first of next week.

Most of the wheat and barley varieties in the nursery probably will never head. Recent hybrid material has been saved temporarily by irrigating. Grasshoppers are menacing this material at present. We have succeeded in keeping the hoppers in check by poisoning, but it appears almost certain that there will be a heavy migration into the nursery from surrounding fields as soon as the hoppers develop their wings. The only way of stopping such an invasion will be to fence them out with wire screening.

Present indications are that the wheat crop in the James River Valley from Mitchell north to the North Dakota line is entirely beyond recovery, with the possible exception of a few fields on corn ground or fallow.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(June 16) The weather of the first half of June was typical of North Dakota in that it was unusual. It was unusually warm and dry. No rain of any importance has fallen since June 2. June 14 and 15 were very warm. Rainfall and temperatures have been such that all cereals, except corn, wilted appreciably on those days. The lower leaves of wheat, oats, and barley in plots

and in the nursery are firing rapidly. Little growth has been made during the past few days.

Vaughn barley was fully headed June 14; Reward wheat was fully headed June 15; and Sixty-Day oats are heading at this date. All cereals are short.

Leaf rust was first noted on Hard Federation and Little Club wheats on June 12.

Haying on the station and in this vicinity was started last week and is reported to be light.

The precipitation for the first half of June was 0.66 of an inch; the maximum temperature was 99° on June 15, the minimum, 43° on June 12.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr. (June 16) Hot dry weather prevailed during the first half of June. Crops have made rapid growth but are beginning to suffer from drought.

First blooms appeared today in varieties sown May 3 in the uniform nursery. Flax in the varietal plots is about 8 to 10 inches tall. Stands in the spacing experiment are exceptionally good, although occasional plants have been girdled by heat canker.

The work is much farther advanced than usual at this season. Emergence and wilt counts are completed to date. Harvest tags have been labeled and seed envelopes are being prepared for the nursery-row harvest. Cultivation of nursery and plot alleys and hand weeding of nursery rows has been completed.

Wilt has developed rapidly during the recent warm weather. Some rows of Newland and other susceptible varieties and hybrids, which had emerged with good stands, have succumbed 100 percent. Heat canker is prevalent in the flax varietal plots but is practically absent in nursery rows where the soil surface was broken up by cultivation following the last rain.

Poisoned hempseed and oats put out in the hemp plots, where the seed and young seedlings were being destroyed, killed at least three gophers and a field mouse; all were found dead aboveground. The hemp reseeded without destroying plants surviving from the early seeding has emerged with fair stands, and poisoned grain has been put out again to get the gophers and mice that are also working on it.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(June 15) Hot dry weather, relieved only by a few showers, has prevailed so far this month. The maximum temperature was 98°.

Crops are making rapid growth and are beginning to show the need of rain. Winter rye is nearly headed, and early varieties of winter wheat and barley are beginning to head. Good stands were obtained with nearly all cereal varieties.

Grasshoppers are becoming quite numerous, and farmers in this part of the State and in eastern Montana are cooperating with Robert L. Shotwell, government entomologist, stationed here, in a campaign for poisoning the hoppers.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(June 15) Small grains have tillered heavily during the first half of June and consequently will need somewhat more than the average seasonal precipitation if they are to produce plump seed. The precipitation so far in June has not been heavy, but one good rain of 0.50 of an inch served to keep pastures and crops in good condition.

Rust was first discovered on June 6 and was identified as leaf rust by Dr. Stakman at University Farm, St. Paul. This is very early for even leaf rust to be discovered in this region. It is plentiful and has been developing normally. No stem rust is yet in evidence.

Grasshoppers are hatching in considerable numbers and appear about as numerous as in 1932.

Proso millet varieties were sown in triplicated 1/56th-acre plots on June 5 and emerged June 12.

In the nursery the most advanced wheat is in the boot. The nursery has been cultivated and hoed once and is being given a second cultivation.

OREGON

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague)(June 9) In May there were at Corvallis 20 rainy days with a total precipitation of 3.52 inches; at High Prairie, 13 rainy days with a total precipitation of only 1.14 inches; and at Tygh Ridge, 11 rainy days with a total precipitation of only 1.78 inches, including a rainfall of 0.93 of an inch on May 2.

Cercosporella foot rot is more prevalent than it has been since 1928. There was no wheat sown in the foot-rot areas in Wasco County, Oreg., except near Kingsley and Friend. Near Spokane, Wash., winter wheat is yellowed and thinned. Foot-rot was well advanced on May 30 although at the time halted by temporary dry conditions. It was just starting to develop on June 1 in the very thin winter-wheat stand at Anatone, Wash.

Winter wheat near Alicel and Imbler in the Grande Ronde Valley of Oregon came through the winter in good shape but in many fields it was yellowed and stunted by the most severe infestation of foot-rot ever seen by the writer. Several fields that had been severely infested three years before but had been in nonsusceptible crops since that time were entirely free from Cercosporella foot .

The best looking winter wheat seen by the writer was in the Palouse region. Spring grain had good prospects throughout the dry area in eastern Washington from the Horse Heaven country to the vicinity of Spokane.

In the coast region of Oregon the Gibbellina like foot rot was very severe on winter cereals. It appeared the first week in May. On June 5 a small percentage of the culms had broken over in such a manner as to indicate the symptons produced by Cercosporella foot rot.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
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Vol. 25 July 10, 1933 No. 10

Personnel (June 26-July 10) and Field Station (June 16-30)

PERSONNEL ITEMS

Dr. H. V. Harlan left Washington on June 24 for Aberdeen, Idaho, where he will take notes on and harvest cooperative barley nurseries. Owing to unusual conditions Dr. Harlan was not able to begin his summer trip as early as usual and therefore had to omit from his itinerary various points en route. However, he stopped at Chicago, Minneapolis, and Milwaukee to confer with maltsters and others interested in brewing barleys.

Dr. H. B. Humphrey spent three days, beginning July 5, at State College, Pa., and Ithaca, N. Y., reading uniform rust nurseries, conferring with collaborators on cooperative rust research, and noting rust conditions en route.

Mr. F. D. Richey returned to Washington on June 30 from a trip to Iowa, Missouri, and Illinois, including a stop at Chicago, where he attended the meetings of the American Association for the Advancement of Science held June 19-22 and conferred with members of the Division staff regarding cooperative corn experiments.

Dr. H. A. Rodenhiser left Washington on June 30 for points in Illinois, Minnesota, North and South Dakota, Montana, Nebraska, Iowa, Indiana, and Ohio to take notes on wheat stinking smut nurseries and to prepare seed and smut for all winter-wheat smut nurseries. He will also take notes on cooperative corn smut experiments in certain States.

Mr. T. R. Stanton left Washington on June 28. His itinerary includes stops in Ohio, Indiana, Illinois, Iowa, South Dakota, Minnesota, North Dakota, Montana, Idaho, and Wisconsin. He will inspect cooperative and other experiments with oats, confer with officials of State agricultural experiment stations on the development and distribution of improved varieties, and study the harvesting and handling of the crop on the farm.

MANUSCRIPTS SUBMITTED

33. Effect of Light on the Development of the Uredial Stage of *Puccinia glumarum*. Wayne M. Bever. June 26. Phytopathology.

34. Winter Wheat Varieties in Nebraska. T. A. Kiesselbach, Arthur Anderson, and C. A. Suneson. June 26. Nebr. Agr. Expt. Sta. Bul. (By courtesy of the officials of the Nebraska station, the major part of the work reported in this manuscript having been completed before cooperative relations were established.)

35. Field Studies on Resistance of Hybrid Selections of Oats to Loose and Covered Smuts. T. R. Stanton, F. A. Coffman, and V. F. Tapke. July 3, Tech. Bul.

RECENT PUBLICATIONS

A Three-Row Nursery Planter for Space and Drill Planting. O. A. Vogel. (Note) Jour. Amer. Soc. Agron. 25(6): 426-428, fig. 1. June 1933.

Russian Methods for Accelerating Sexual Reproduction in Wheat. H. H. McKinney and W. J. Sando. Jour. Heredity 24(4): 165-166. April 1933.

Factors Affecting Infection of Wheat Heads by *Gibberella saubinetii*. Grace Wineland Pugh, Helen Johann, and J. G. Dickson. Jour. Agr. Research 46(9): 771-797, figs. 1-12. May 1, 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

Ophiobolus oryzinus, the Cause of a Rice Disease in Arkansas. E. C. Tullis. Jour. Agr. Research 46(9): 799-806, fig. 1. May 1, 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Arkansas Agricultural Experiment Station.)

Comparative Responses of a Spring and a Winter Wheat to Day Length and Temperature. Annie M. Hurd-Karrer. Jour. Agr. Research 46(10):867-888, figs. 1-9. May 15, 1933.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)(July 5) Weather conditions in June were about normal. The maximum temperature was 97° and the minimum 58°. The total precipitation was 5.79 inches, about an inch less than in June last year and 1.45 inches more than the 23-year average for this month. Two of the rains were heavy enough to add considerable water to rice fields and reservoirs.

Heavy rains during the growing season normally reduce the cost of rice production by reducing pumping operations, and probably increase yields by furnishing pure water.

Rice at the Station and in commercial fields is generally healthy and vigorous. Practically no leaf-spot diseases have developed.

Other crops on the station are growing nicely; however, the precipitation has been rather heavy for cultivated crops.

Work on the station included irrigation, cultivation, weeding, and the dusting of cotton with calcium arsenate to control boll weevil.

W. E. Anderson, State Entomologist, M. B. Sturgis, E. A. Fieger, A. H. Meyer, C. L. Stracener and Director Dowell, of the Louisiana State University, were visitors in June. Mr. R. H. Wyche, Superintendent of Texas Substation No. 4, Beaumont, Texas, was at the Station on June 20.

ARKANSAS

Rice Branch Experiment Station, Stuttgart (Rice Production and Improvement, C. R. Adair)(June 30) The weather during the rice seeding season was very unfavorable this year. The heavy rainfall in April and May was so distributed that it was impossible to do any extensive seeding during the latter part of April and the first half of May, at which time a large percentage of the rice is usually sown in this section. The precipitation in April and May was 3.88 inches and 9.97 inches, respectively; the averages for these two months are 1.5 and 5.6 inches. Only two rains of 0.54 of an inch each were recorded in June. These rains, in the form of local showers, have not helped the area generally. The soil has dried out very rapidly during the past four weeks and the late sown rice has emerged to poor and uneven stands. In many cases it has been necessary to irrigate the rice to get it up. The maximum temperature in June was 99°F. on the 21st and 22nd, the minimum, 49.5° on the 14th.

The early rice looks very well in most cases, but nearly all of the late sown rice is quite poor both on the station and in farm fields. The condition of the crop at this time indicates that the yields probably will be low this year. If the dry weather continues it will be necessary to abandon part of the rice acreage already seeded, because of the shortage of water.

The yields of the 1933 winter-oat crop were slightly higher than those of 1932 but far below those obtained in 1931. The low yields this year were due primarily to a severe epiphytotic of crown rust (Puccinia coronata avenae), although there was also some winterkilling in February.

The 1933 and 3-year average yields for the varieties in the field plot experiment, are given in the following table. The leading varieties are of the Red Rustproof group and the lower yielding varieties of the common group. This was especially true in the two years when crown rust was so severe.

Variety	C.I.No.	Yield per A.(Bu.) 1933	(1931-33 3-yr.Av.	Variety	C.I.No.	Yield per A.(Bu.) 1933	(1931-33 3-yr.Av.
Lee	2042	2/ 14.4	40.6	Appler	1815	13.0	44.5
Winter Turf	541-4	3/ 3.9	29.8	Ferguson no.71	844	23.2	48.6
Sporen Gray Winter	2506	3/ 1.6	33.6	Ferguson no.922	2150	29.9	53.8
Winter Turf 1/	--	-	--	Arkansas no.12	--	5.8	35.5
Custis	2041	11.5	40.3	Arkansas no.15	--	5.5	27.2
Nortex	2382	22.1	49.7	Arkansas no. 1.	--	2.8	31.9
Fulghum	708	16.1	41.0	Arkansas no. 6	--	5.7	33.3
Kanota	839	15.6	40.7	Arkansas no.1992	--	6.8	35.5
Fulghum(winter)	2499	12.2	44.3	Arkansas no.19322	--	5.2	34.9
Fulghum	2500	14.3	45.5	Tennessee Culberson	--	12.7	--
Frazier	2381	19.0	39.3	Virginia Turf	--	4/ .8	--
Hairy Culberson	2505	9.4	32.5	Winter Gray	--	4/ 2.0	--

1/Cook Seed Co. 2/Average of 13 checks. 3/Only one plot grown. 4/Only two plots grown

IOWA

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)(June 30) At present corn in the vicinity of Ames is farther advanced than usual in spite of one of the most unfavorable seasons in the past 10 years. The early part of May was cold and wet. On May 19 a rainfall of 3.2 inches (the last rain until June 24, when 0.99 of an inch fell) washed some of the plots quite badly. About a week later corn that was up was damaged by a severe sand and dust storm.

June has been unusually hot and dry. Corn has grown rapidly and at present the inbred strains are showing the effects of the dry weather, although the hybrids do not appear to be injured as yet. All the yield tests on the Agronomy Farm were laid by by June 28 and at that time averaged about waist high. The early inbred lines are tasseling and silking and a few shoots were covered today.

Early oats will be very poorly filled; late oats are less damaged. Barley and winter wheat are not seriously damaged. Winter wheat is ripe. Professor Burnett completed the harvesting of his nursery to-day.

Although Ames has had a very unfavorable season it has been luckier than the rest of the State. Western Iowa has been extremely dry and there has been much damage by sand storms. Eastern Iowa was so wet that planting was considerably delayed.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul, (Wheat Breeding, E. R. Ausemus)(July 3) The lack of rainfall and the extremely high temperatures have seriously injured the small grains. The maximum temperature recorded at University Farm was 100° on June 19. The rainfall for the month of June was 1.31 inches, of which 0.58 of an inch fell on June 20. The normal rainfall for June is 4.22 inches.

Corn is in excellent condition and is now tasseling. This is from 7 to 10 days earlier than normal.

Droughty conditions are reported in all parts of Minnesota, but they are not so severe in the southern part of the State.

Recent visitors at University Farm were H. V. Harlan and A. C. Dillman of the Division of Cereal Crops and Diseases.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(June 30) Threshing of the varietal experiments was finished June 30. Yields of wheat, oats, and barley are presented in the following tables. White Mediterranean, a local strain of white wheat, produced the highest yield. It has shown little promise in previous tests. Denton wheat was second in yield, followed by Quivira and Tenmarq, both hard wheats. Nortex oats, a strain of Red Texas selected by the Substation, produced the highest yield in the oat varietal test. Barley yields are very low and the grain is of poor quality.

June was one of the driest months on record; there was no rain of any value. Harvest was later than usual and was not completed until about the middle of the month. Threshing started almost immediately and by the end of the month nearly all grain was threshed. The dry weather was favorable for both operations. Grain in most instances was of excellent quality. Yields in this section were below normal, wheat yielding about 10 to 15 bushels and oats about 30 bushels to the acre. The lack of moisture in June has reduced the corn crop materially in this section and cotton is beginning to suffer.

The maximum temperature for June was 103°, the minimum, 51°. The precipitation was 0.05 of an inch.

The nursery and varietal experiments at Amarillo were failures because of drought and high winds. Of the cooperative varietal experiments located in the Panhandle section only four were harvested. Large areas of wheat on the Panhandle have been completely lost. Yields on the harvested areas are very low. The estimated total production in the hard wheat area is only 7,000,000 bushels.

Wheat

Variety	C. I. no.	T. S. no.	Av.yield (Bu.per A)	Variety	C. I. no.	T. S. no.	Av.yield (Bu.per A.)
White Med.	10023	-	1/ 32.9	Fulcaster	6471	-	28.9
Denton	8265	-	1/ 32.5	Mediterranean	--	5933-38	28.1
Quivira	8886	-	32.1	Blackhull	6251	-	27.8
Tenmarq	6936	-	31.3	Kharkof	1442	-	26.1
Kanred	5146	-	31.0	Mediterranean	--	5915-81	25.5
Med.	--	5933-32	30.8	Harvest Queen	6199	-	25.2
Kawvale	8180	-	30.3	Mediterranean	--	3015-72	24.8
Med.	--	5933-34	29.2	Nebraska no.60	6250	-	23.8
Do.	--	5933-20	29.2	Sutton	10053	-	22.7
Do.	--	5923-33	1/ 29.1	Nebraska no.28	5147	-	19.7

1/ Average of 9 plots.

Oats

Spring sown

Variety	C. I. no.	Tex.Station no.	Av. yield (Bu. per acre)
Nortex	2382	-	88.0
Texas Red Rustproof	--	1415-12	87.8
Do.	--	1118-69	87.1
Do.	--	2805-43	86.1
Fulghum	2498	--	85.8
Appler Rustproof	--	1401-24	85.3
Ferguson 922	2150	--	83.7
Texas Red Rustproof	--	2805-39	77.3
Frazier	2381	--	77.2
Texas Red Rustproof	--	6217-43	76.3
Norton strain 3	--	--	73.7

Barley

	Fall sown				Spring sown		
Variety	C. I. no.	T. S. no.	Av.yield (Bu.per A.)	Variety	C. I. no.	T. S. no.	Av. yield (Bu.per A.)
Finley	5901	--	30.0	Stavropol	2103	-	26.1
Tenn.Winter	--	13825	24.9	Coast	690	-	18.9
Wis.Winter	2159	--	24.8	Club Mariout	261	-	16.3
Tenn.Winter	--	18561	22.2	Vaughn	1367	-	14.8
Do.	3545	15826	20.6	Finley	5901	-	10.8

United States Dry-Land Field Station, Dalhart (B. F. Barnes and E. R. Steen) (July 1) A precipitation totaling 1.77 inches has been recorded for the first half of 1933. There has been very little soil blowing during the past two weeks. However, hot winds have prevailed. The former maximum temperature record of 105° was broken on June 30, when 106° were recorded.

A shower of 0.46 of an inch on the 20th furnished moisture that caused additional germination of the seed planted May 15 in the sorghum date-varietal blocks, but a stand has not been secured of any variety. Part of the seedlings have wilted and died. No other sorghums have been planted because of the extreme drought.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(July 1) The weather in June was worse for sorghums than has been experienced in this section since the Station was established. Temperatures reached 100° or more on fourteen days. With a precipitation of only 0.10 of an inch and a dry soil to start with it has been useless to plant sorghums, especially the selections seed of which cannot be replaced.

Broomcorn and sorghums planted on June 14 emerged to very spotted stands; the stand of the broomcorn was better than that of the grain sorghums. Some rows of the latter have only 8 or 10 plants, while other rows approach fair stands. Annual weeds are not in evidence.

Maximum temperature for the last half of June, 108° on the 29th and 30th; minimum, 56° on the 15th. Precipitation, 0.09 of an inch.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(July 1) Threshing of the wheat nursery, which had been in progress during the past two weeks, was completed yesterday. No yields have been calculated, but probably few winter-wheat varieties will average more than 15 bushels per acre. Grain of most varieties in the nursery appeared to be less shriveled than that from the varietal plots, where test weights ranged from 59 pounds to as low as 50 pounds per bushel.

KANSAS

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, L. W. Boyle) [July 29] During the period from June 1 to 20, data were gathered on the occurrence and development of foot rot of winter wheat at Woodward, Okla., Floydada, Texas, Akron, Colo., and Hays, Kans. Seedings at other points in the Great Plains area were lost because of adverse conditions

This season, as in the past, foot rot was found to be more prevalent and severe in the earlier fall seedings.

There are indications that foot rot in the semiarid region is not due to one but to several organisms that may occur as a complex.

Relative tolerance, or severity of the disease in varieties, varied according to locality; however, Early Blackhull was very severely infested wherever observed in earlier seedings.

It has been a popular belief that drought favors the development of foot rot. Observations are that drought merely emphasizes a comparison between healthy and infested seedings but does not necessarily favor the development of an infestation.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis) [July 3] There was only 0.92 of an inch of rainfall in June, which was distributed in six small showers. Spring wheat, oats, and barley are badly injured by drought, especially on land cropped the previous year. These probably will produce less than average crops on fallow.

The corn and sorghum varieties have made rapid growth and so far have not been injured by the dry weather. However, they will need rain soon. The surface soil was so dry the latter part of June that the proso varietal test has not yet been planted.

F. A. Coffman visited the station on June 27, 28, and 29.

Maximum temperature for last 15 days in June, 100°; minimum, 49°. The precipitation was 0.38 of an inch.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (June 29) There was no effective rainfall in June. High temperatures and hot winds ripened the grain, especially wheat, somewhat early, but the yields will be considerably better than those in the eastern part of the State. Rain is needed for the corn.

Good stands of corn were obtained. The irrigated test at Sutherland is situated on a more desirable area of ground than at the Substation and should again give valuable results.

Sorghum varieties were planted on June 2 and a fine stand was obtained. Twenty varieties and selections were included in the tests. Proso was planted in a date-of-seeding test, since the late seeding recommended for Colorado conditions gave very low yields here. The second seeding was made on the 3rd and the third seeding on the 21st. The latter seeding was emerging on the 25th, while the first seeding was heading on the 23rd.

Barley and oat varieties attained a fair height. North Platte no. 1, Sandrel, and Spartan seem to be the leading barley varieties this year. A few early barley selections in the nursery were harvested on June 27 and a few more to-day. In the uniform hardiness nursery and uniform yield nursery, 60 rows were harvested this afternoon. All of the wheat varieties probably will be harvested July 2.

A crops field day was held on June 28. About 150 persons attended. Splendid interest was shown both at the morning program and on the tour of the plots in the afternoon even though the temperature reached 102°. There seemed to be a greater interest in barley than in wheat.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (July 1) Very hot weather and little rain in June have seriously burned wheat, oats, and barley varieties in the plots. Nursery varieties in rod rows show some firing of the lower leaves but have not been injured much as yet.

Heading notes are nearly complete. The wheat, oats, and barley varieties in plots were headed June 26, 30, and 25, respectively. Heading of the nursery material in rod rows is complete with the exception of a few varieties in 5-foot rows and in the uniform rust nursery.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)(June 30) Extremely hot, dry weather prevailed during the last half of June. The mean temperature for June was 72° compared with the 20-year average mean June temperature of 64°. The maximum temperature was 106° on June 18, and the average daily maximum during the last half of June was 90°.

Precipitation in June was only a little more than 2 inches compared with a 20-year average of over 3 inches. Most of the precipitation occurred in electric storms that were soon over and caused little interruption to the prevailing heat and drought. Evaporation in June was about two inches higher than the 20-year average.

Early crops have suffered severely from drought and some are damaged almost beyond recovery. Flax sown May 2 in the seed-treatment experiment, which commenced blooming about June 19 and has a thick stand, suffered severely from droughtand has set a very small crop of bolls to date. Flax varieties in plots and nursery rows sown early in May but having thinner stands show less severe drought injury.

Walsh flax and two varieties of Golden flax show severe injury from heat canker. Bison, though not so severely damaged, also suffered more from heat canker than did most other varieties.

Between 400 and 500 people visited the experiment station the afternoon of June 28, when a farmers' day was held under the direction of the agricultural agents of Morton and Burleigh counties.

A violent electric storm, accompanied by rain, wind, and hail, interrupted the inspection tours and caused the visitors to hasten homeward at an early hour. The storm damaged trees, buildings, and crops in this locality and killed some poultry. Crops at the experiment station were damaged in varied degrees. The stems of about 5 percent of the flax plants were broken down by the hail. The rain accompanying the storm and about an eighth of an inch of rain this morning caused a freshening in the appearance of crops. The yields of all crops will be greatly curtailed, however, unless there is more abundant rainfall soon.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(July 1) Hot, dry weather and an abundance of sunshine prevailed in June. The total rainfall, including 0.81 of an inch on the 30th, was 2.07 inches, or about an inch below normal. As a result of the heat and drought, all grains developed rapidly, heading out when very short, and suffered from the drying up of the lower leaves.

As a result of the rain yesterday and 0.26 of an inch to-day, crops have revived considerably. Grains sown on fallow should make a fair crop. Crops on corn ground will be somewhat lighter, and some fields "stubbled in" will be hardly worth threshing.

The spring grains are headed about 10 days to two weeks earlier than usual and corn is more than knee high.

No rust has been observed. Some flax canker is present and wilt has injured Newland and Buda varieties of flax.

The backcrossing of spring-wheat hybrids is in progress.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(June 30) This section has not escaped the widespread drought. The precipitation for June totaled 0.99 of an inch, a little over one-fourth of the normal; the mean temperature was 8° above the normal. Crops generally are in a critical condition, and some fields have already been plowed up. The rains that provided some relief in southern North Dakota the past week did not reach this section.

The nursery and wheat varietal field plots still look comparatively well and are rapidly coming into head at about the same dates as in 1932. The first crossing of the season was done yesterday.

Leaf rust is moderately abundant but stem rust has not yet been observed. Grasshoppers are even more serious than in 1932 and are taking heavy tolls on many fields. The first application of poison bran bait was spread yesterday on nursery and field plots.

On June 13, 60 4-H club boys participated in a seed demonstration in separating durum and common wheat. The demonstrationwas supervised by the writer. The facility attained by the boys in an hour's work was rather surprising.

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, O. A. Vogel) [July 29] The weather in June was favorable for growing crops throughout eastern Washington. A rainfall of 0.82 of an inch was recorded at Pullman June 7, 8, and 9, at a time when a number of wheat fields were beginning to show the effects of warm weather.

Examination of a number of fields of Albit near Pullman revealed a heavy infection of powdery mildew (Erysiphe graminis) in the thicker stands, particularly on the wetter areas. A similar type of injury on the leaves but with no evidence of fruiting spores, and ranging from numerous small flecks to necrotic areas often one-fourth of an inch or more in diameter, was observed more or less throughout the fields. Some fields and parts of fields, particularly the lower areas and northern slopes, are more severely infected than others. The same type of injury, together with heavy infections of powdery mildew, was noted last year in fields of Albit throughout Whitman County.

In the field plots on summer fallow Albit is so badly injured that the upper leaves have begun to curl and have given the plots a yellowish color. Ridit and Coppei are the two next most severely injured, while Hybrid 128 and the Crimean types are least affected. As the plots on the summer fallow land have just recently headed, a considerable reduction in yield is expected from the more severely injured varieties.

The only variety in the spring-wheat nursery that shows a severe leaf injury similar to that of Albit is Powers Prolific. In this case the injury consists of large necrotic blotches with no trace of fruiting spores at present.

Winter barleys are beginning to ripen. Only eight varieties, all of recent German origin, survived the winter with from fair to good stands, while all others in the nursery were almost completely winterkilled.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (July 1) Weather conditions have been uniformly hot and dry since the last rain on May 22. Spring-sown crops to which irrigations were applied as needed have grown rapidly. All barley, oats, and wheat have headed out in the nursery at Logan and look very well for this time of year. Some of the barley varieties have reached a height of 50 inches; most of the barleys last year were around 30 inches high.

Corn and grain-sorghum varieties have grown very well compared with the same time last season. Flax varieties are doing well this year but have not grown so tall as in 1932.

The winter-wheat nursery has suffered greatly from the drought. Many of the dry farms are reported as almost complete failures because of lack of moisture.

The precipitation for June was 0.04 of an inch.

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, L. L. Davis)(July 5) Spring temperatures have been somewhat lower than normal, and the rice crop in the Sacramento Valley is estimated to be about 10 days later than usual. The average maximum temperature for June was 87.8° and the average minimum, 56.3°. The highest temperature recorded so far is 107°, on June 13.

The condition of the commercial rice crop and the rice at the Station is good. Satisfactory stands were obtained this spring on most plots and extra good stands in the nursery. Early maturing rice will begin to head about the first of August.

The increase plot of the medium-grain selections no. 241B5-30 looks very promising at this time.

The building of levees, roads, and ditches on the east half of the Armstrong land has been completed. This area has been laid out in plots.

The remainder of the Station rice crop of last year was sold at prices ranging from $1.35 per hundred for broken rice to $1.65 for the best grade of rough rice.

The estimated rice acreage in California this year is 106,000 acres, or about 4,000 acres less than last year. The advance in prices for rough rice this spring undoubtedly had much to do with increasing the acreage over that intended for seeding.

REC'D
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Personnel (July 11-25) and Field Station (July 1-15)

PERSONNEL ITEMS

Mr. C. E. Chambliss is attending the meetings of the World's Grain Exhibition and Conference at Regina, Canada, as a judge of rice exhibits. Returning from Regina, Mr. Chambliss will make stops at Winnipeg, Chicago, and Detroit to collect specimens of wild rice and study the crop in its northern habitat. In Chicago and Detroit he will inspect processing of commercial food materials in which rice is used. Mr. Chambliss will return to Washington about August 7.

Dr. H. B. Humphrey left Washington on July 12 to visit cooperative rust and smut experiments at field stations in Indiana, Iowa, Minnesota, South Dakota, North Dakota, and Montana. He will confer with collaborators and officials of agricultural experiment stations on cooperative rust research projects and collect specimens of cereal diseases.

Mr. J. W. Jones will leave Washington on July 29 to visit cooperative rice experiments and breeding nurseries in Missouri, Arkansas, Louisiana, Texas, and California. He will assist in the rice harvest and make crosses and selections in the nurseries. He also will confer with officials of agricultural experiment stations and superintendents of rice stations on cooperative rice research. Mr. Jones will return to Washington about October 15.

Dr. M. A. McCall returned to Washington on July 22 from a short trip to Missouri and Indiana in connection with readjustments in cooperative work made necessary by fund reductions.

Dr. S. C. Salmon left Washington on July 12 for his annual field trip to inspect cooperative wheat experiments in the western area.

MANUSCRIPTS SUBMITTED

36. Physiologic Specialization in Puccinia coronata avenae (Corda) Eriks. and Henn. H. C. Murphy. July 12. Tech. Bul.

RECENT PUBLICATIONS

Rapid Colorimetric Determination of Potassium in Plant Tissues. V. H. Morris and R. W. Gerdel. Plant Physiol. 8(2): 315-319. April 1933.

Earliness and Seasonal Growth Habit in Wheat As Influenced by Temperature and Photoperiodism. H. H. McKinney and W. J. Sando. Jour. Heredity 169-179, frontispiece and fig. 1. May 1933.

Barley Varieties of California. Jour. Inst. Brew. [London] 39(6): 242-248, illus. June 1933.

Inheritance of Awn Development in Sonora Wheat Crosses. K. S. Quisenberry and J. Allen Clark. Jour. Amer. Soc. Agron. 25(7): 482-492, fig. 1. July 1933.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

ARKANSAS

Agricultural Experiment Station, Fayetteville (Rice Diseases, E. C. Tullis) (July 17) Helminthosporium leaf spot of rice is now making its appearance in Arkansas, Louisiana, and Texas. Stem rot was found on 11 varieties of rice at the Crowley station. The most severe infestation was on early seedings of the variety Shoemed. Sclerotia were being produced in the diseased sheaths and large numbers of conidia of Helminthosporium sigmoideum were found on the outer sheath surfaces.

Trichoderma sheath spots were found on eight varieties but in no case had any of the leaves died as a result of the sheath infections.

INDIANA

Purdue University Agricultural Experiment Station, LaFayette (Leaf Rusts, R. M. Caldwell)(July 20) The inspection of uniform cereal rust nurseries in Kentucky, Ohio, Indiana, Illinois, Michigan, and Wisconsin has recently been completed.

Stem rust in these nurseries, with the exception of that at Madison, Wis., has been either entirely absent or present only in traces in both winter and spring varieties. At Madison, some extremely susceptible winter selections suffered an infection of 40 percent severity, although most varieties were lightly infected.

Leaf rust of wheat was moderately severe at Lexington, Ky., and light at Columbus, Ohio. In some parts of Indiana and Illinois severe leaf rust epidemics occurred, while at other places leaf rust was only moderate. At Lansing, Mich., and Madison, Wis., very heavy leaf-rust epidemics developed.

Crown rust of oats was generally very light at the stations inspected with the exception of LaFayette, Ind., where susceptible varieties were moderately infected just before ripening.

Harvest of the winter-wheat breeding nursery at LaFayette was begun on June 26 this season, which is about 7 to 10 days earlier than usual. The season was extremely dry and warm and consequently short. In spite of these adverse conditions both winter and spring varieties have yielded well and produced fairly plump grain. Diseases were unusually prevalent and provided good opportunities for selection for resistance. Leaf rust, powdery mildew, and loose smut were severe. Artificial inoculation with bunt resulted in over 95 percent of infection in susceptible varieties. Very distinct differences in resistance to mildew, leaf septoria, loose smut, and bunt were evident in the leaf-rust resistant selections. Certain lines apparently possessed in a high degree the combined field resistance to all of these diseases as well as seedling resistance to stem rust in greenhouse tests.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(July 15) Very hot, dry weather prevailed throughout the first half of July. In addition, hot winds were recorded on several days. Temperatures ranged from 75 to 108°. The maximum temperature was 100° or more on all except four days. The mean temperature for the period was 89.1° F. as compared with a normal of 83.7° for the month of July. No effective precipitation has been recorded since May 25.

Corn and all feed crops have been materially injured by the severe dry weather. Cotton has stood the conditions very well but is now showing the effects of the drought.

All nursery threshing was completed during the first part of July. The yields ranged from 11.0 to 39.2 bushels per acre and the quality of the grain was good.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(July 17) The most severe early season drought since this station was started was finally broken by a rain of 1.31 inches on July 14 and 15. It is practically too late to plant experimental sorghums, though some of the earlier maturing varieties will be planted to study their behavior under these late conditions.

Because of the drought the grain-sorghum and broomcorn project will be about one-third as large as planned. Seed that could not be replaced was not planted, as conditions were too severe to risk its loss.

It is likely that the grain-sorghum varietal experiment, which was seeded on June 14, will now proceed to emerge in the blank spaces.

The outlook for feed grains is bad.

The maximum temperature for the first half of July was 108° on the 1st, 2nd, and 9th; the minimum, 66° on the 15th. The precipitation for the same period totaled 1.38 inches.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (July 17) The weather continues dry even though the severe heat wave has been abated. Corn, potatoes, pastures, and other late crops are in need of rain. Wheat varieties in plots are dried up and it is questionable if they will produce enough seed for the 1934 crop. Varieties in rod rows in the nursery are standing the drought well.

Nine showers fell during the first half of July. Eight of them totaled, individually, less than 0.2 of an inch. The total precipitation for the period was 1.02 inches. The temperature ranged from 47° to 97° with an average of 76°.

Recent station visitors were Mr. J. A. Clark of Washington, D. C., Dr. Ivar Johnson of University Farm, St. Paul, Dr. L. R. Waldron of Fargo, and Mr. H. R. Sumner of the North West Crop Improvement Association at Minneapolis.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr. (July 17) Hot, dry weather continued during the first half of July. The rainfall of about an inch altogether was mostly in small showers of little benefit to crops.

The flax plots have suffered severely from drought but show less apparent drought injury than do earlier sown crops, such as wheat, oats, and barley. Flax sown in drilled plots before the middle of May is nearly all through blooming. Flax in cultivated rows is still in bloom and appears in much better condition than the flax in drilled plots.

Wilt has developed progressively in the nursery on flax-sick soil. All rows of the most susceptible varieties and many rows of F_3 hybrids between susceptible and resistant varieties are entirely eliminated. Some varieties usually considered wilt resistant show severe injury from wilt. Strains selected in the last two seasons for their freedom from wilt have again demonstrated their practical immunity from wilt as well as freedom from canker and drought injury.

Crops in this locality are severely injured by drought and may be expected to produce very poor yields.

Mr. A. C. Dillman inspected the flax experiments July 7 and 8 and again on July 16.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(July 15) Showers and a few cool days this month have helped to relieve somewhat the effects of the drought. A rain of 0.90 of an inch was recorded on July 4, and the hail which accompanied it damaged field crops slightly.

The cereal harvest began July 14, with the cutting of early varieties of oats and barley in the nursery. Early varieties of these crops in field plots, together with Reward wheat, were harvested today. Without checking up on the dates, this is undoubtedly the earliest date for beginning the harvest of varietal plots at the Substation.

Crop yields will be light in this section. A few fields of grain are being mowed for hay; some stubbled-in fields have been destroyed by grasshoppers. Some fields on fallow or corn land will give fair yields. There is a prospect for a good crop of corn except where the stand was reduced by cutworm injury.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (July 15) A rain of about 1 inch on July 6 came at a very critical time and saved the better fields of small grains from severe damage by drought. The nursery and field plots are progressing fairly well but need more rain to produce normally plump grain. Grasshoppers are a constant threat and have pretty well stripped the leaves from the wheat varietal field plots. Large numbers are being poisoned in the field plots and in the nursery by means of poison bran bait.

Mr. J. A. Clark and Dr. L. R. Waldron were visitors on July 7 and 8. Mr. Wallace Butler was here on July 11 and found the first stem rust observed. This was in the second or third generation but had spread very little to surrounding varieties. The earliest experiments are well along into the dough stage and all the experiments have headed. Harvest probably will be about a week early this season.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (July 15) Dry weather prevailed throughout the first two weeks of July. Crops are ripening prematurely because of the lack of soil moisture. High temperatures and frequent winds have increased the evaporation materially. Early varieties of winter wheat, oats, and barley will be ready to bind within a few days.

Grasshoppers are very numerous and in many instances have destroyed fields of spring grain. On the station the grasshoppers have started to clip off the oat spikelets and have also damaged barley and flax and late-sown spring wheat to some extent. Poison bran has been spread nearly every day since June 23.

Crop prospects in central Montana are below average owing to the combined effects of hail, unfavorable growing conditions, and grasshoppers. The winter-wheat fields left to harvest will produce around 15 bushels per acre, and spring wheat will yield considerably less.

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin)(July 15) Hot, dry weather the past week caused cereals to ripen rapidly. All the barley and most of the oat varieties have been harvested. All but the very late varieties of winter and spring wheat will be ripe in about two days. Winter and spring-sown varieties are ripening at about the same time this year. Prospects are good for excellent yields where stands are uniform

Until the past week, no very hot weather has been experienced since the middle of June. The maximum temperature has been 90°F. or above since July 6. A maximum of 99° was reached on July 14. Minimum temperatures each day have been reasonably cool.

The annual field day was held on July 13.

Sherman County Branch Station, More (Cereal Agronomy, D. E. Stephens) (July 10) Unseasonably cool weather has prevailed in the Columbia River Basin of Oregon during the past six weeks. The rainfall, however, has been scant, the total at More for the month of June being only 0.39 of an inch. The highest temperature in June was 93°. Only on 2 days in June was the temperatures above 90° and only on 5 days were the maximum temperatures above 80°. For the first ten days in July the maximum temperature was 85°.

Lack of subsoil moisture and the deficiency in precipitation during the last six weeks have caused severe drought injury to all grain crops on the Station. Winter wheat with thin stands gives promise of being the best crop. Spring-sown cereals are all too short to cut with a binder. Spring barley is about ripe and winter wheat is beginning to ripen.

Wheat yields in the Columbia River Basin of Oregon will not be much more than half of normal, except in eastern Umatilla County where the spring-wheat crop is especially fine.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

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Vol. 25 August 10,1933 No. 12
Personnel (July 26-Aug.10) and Field Station (July 16-31)

PERSONNEL ITEMS

Dr. H. B. Humphrey returned on August 9 from a 2-day trip in the vicinity of Morrisville, N. Y., where he read cooperative uniform wheat and oat rust nurseries and collected rust specimens for the identification of physiologic forms.

Mr. C. H. Kyle left Washington on August 9 for Tifton, Ga., where he will spend some time at the Coastal Plains Experiment Station to obtain field data on cooperative corn breeding plots.

Dr. J. H. Martin left Washington on July 29 for his annual trip in the States where grain sorghums and broomcorn are grown in cooperative experiments. He will conduct physiologic and breeding experiments with grain sorghums and broomcorn and confer with employees of the Division and officials of State and Federal stations regarding cooperative work.

Dr. J. W. Taylor spent August 2 at College Park and Baltimore, Md., to obtain information on and samples of smutted wheat.

MANUSCRIPTS SUBMITTED

37. Inheritance of Resistance to Loose and Covered Smuts in Some Oat Hybrids. T. R. Stanton, George M. Reed, and F. A. Coffman. July 26. Jour. Agr. Research.

38. Harvesting Varietal Plots of Winter Wheat with a Combine. Edmund Stephens. July 27. Jour. Amer. Soc. Agron. (Note).

39. Pollen Tube Establishment and the Deficiency of Waxy Seeds in Certain Maize Crosses. G. F. Sprague. July 31. Natl. Acad. Sci. Proc.

40. Inhibition of Selenium Injury to Wheat Plants by Sulphur. Annie M. Hurd-Karrer. August 2. Science.

41. Stem Rot of Rice. E. C. Tullis and E. M. Cralley. August 7. Ark. Agr. Expt. Sta. Bul.

42. Varieties of Sorghum in Kansas. A. F. Swanson and H. H. Laude. August 9. Kans. Agr. Expt. Sta. Bul.

RECENT PUBLICATIONS

A Cytological Study of the Teliospores, Promycelia, and Sporidia in Puccinia malvacearum. Phytopathology 23(7): 572-586, fig. 1-4. July 1933. (Cooperation between the California Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor) (July 30) Yields of the small grains, with the exception of oats, were poor. Wheat heads filled poorly and the kernel weight was light. Oats were above the average and the quality of the grain was good. The yields obtained in the triplicate 40th-acre plots of wheat and oats are shown in the following tables.

Yield of winter-wheat varieties grown in triplicated 40th-acre plots and percentage of the inclosing (6) Purplestraw check plots, 1932-33.

Variety	C.I.no.	Av. Yield (Bu. per acre)	Percent of Purplestraw check
Leap	4823	26.5	113.2
Wharten	10071	29.6	113.0
Gasta	11398	28.5	113.0
Red Wonder	5780	28.4	109.2
Arlando	10069	28.7	107.1
T 47-55	--	25.9	102.8
Purplestraw	1957	25.6	102.4
Dixie	10070	26.6	99.3
Leap (Maryland sel.)	--	21.9	93.6
Mammoth Red	2008	23.0	92.0
Fultz	1923	22.3	89.2
Trumbull	5657	23.2	88.5
Dietz	1981	20.3	86.8
Fulcaster	1945	21.6	86.4
Missouri Bluestem	1912	22.3	85.8
Shepherd	6163	21.7	83.5
Genessee Giant	1744	21.2	81.5
Poole	1979	19.0	81.2
V. P. I. 131	10047	21.7	81.0

Yield of winter-oat varieties grown in triplicated 40th-acre plots, and percentage of the nearest Lee check plots, 1932-33.

Variety	C.I.no.	Yield (Bu. per acre)	Percent of Lee check
Custis	2041	78.7	99.6
Randolph	2275	75.5	99.0
Culberson	273	75.4	95.4
Fulghum	708	74.9	94.8
Winter Turf	431	71.6	93.8
Do.	541-4	71.3	93.4
Sporen	2506	67.1	87.9
Fulghum selection	699-2011	65.4	84.1
Do.	699-202	63.1	79.9
Lee	2041	79.0	--

ARKANSAS

Agricultural Experiment Station, Fayetteville (Rice Diseases, E. C. Tullis) [Aug. 7] Helminthosporium leaf spot of rice is more prevalent in many fields in the vicinity of the Rice Branch Experiment Station at Stuttgart than it was last year at this time.

Stem rot is appearing at the branch station and in commercial fields under observation. Shoemed rice at the station is most severely attacked at the present time. This is the same condition that was observed on Shoemed at the Crowley (La.) station early in July, with regard to severity. A number of other varieties in the stem-rot nursery are also showing early symptoms of the disease. No sclerotia had been formed in the diseased tissues nor were there any conidia of Helminthosporium sigmoideum on the sheaths of infected plants.

IOWA

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy) (Aug. 3) With the exception of a few late hybrids, all of the oat nursery has been harvested, and threshing is now in progress. Yields will necessarily be low because of the excessively hot, dry weather in May, June, and July. The best fields of Iogold and Richland oats near Ames have been yielding approximately 50 bushels per acre. These fields are far above the average for the State; in fact, many fields in Iowa, particularly in the southwestern part, were not harvested because of the low yield.

Heavy infections of crown and stem rust, and loose and covered smut were obtained in the oat nursery. Weather conditions throughout most of the season were decidedly unfavorable for the development of rust, but satisfactory epiphytotics of both rusts were procured by means of injection of urediospores into susceptible check plants. This method of initiating an epiphytotic under field conditions is by far the most successful of any the writer has attempted. Inoculations can be made at any time of the day, independently of humidity or sunshine. Check plants inoculated in this manner disseminated urediospores for a much longer period than plants inoculated by dusting, etc.

Messrs. T. R. Stanton and F. A. Coffman left Ames July 21. They and the writer studied in detail numerous hybrid selections that are being grown cooperatively. Rapid progress is being made toward the attainment of high-yielding strains resistant to both rusts and both smuts.

Dr. H. B. Humphrey was here July 14 and 15, inspecting the cooperative cereal disease experiments. Mr. I. M. Atkins of Denton, Texas, was a recent visitor at the station.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus) (Aug. 3) The dry weather continued during the first week in July. On July 10 and 11, 1.27 inches of rain fell but this was too late to be of benefit to the cereal crops. Crops ripened prematurely because of lack of moisture in June. All cereal crops have been harvested and threshing has been started. Wheat seed is badly shriveled.

A satisfactory stem-rust epidemic was obtained in the spring-wheat rust nursery under artificial inoculation even though adverse weather prevailed. Many varieties that had been highly resistant in previous tests showed a heavier stem-rust infection this year. Leaf rust developed in the space-planted material sufficiently to permit selection of resistant plants for further study.

Cereal crops in Minnesota are spotted, being almost failures in some localities and satisfactory in others. Corn is in good condition in all parts of the State and is now past the tasseling stage.

The maximum temperature for the month was 100° on the 30th; minimum, 57° on the 8th. The precipitation for the month was 2.16 inches as compared with a normal of 3.73 inches.

Recent visitors at the Station included Messrs. M. N. Pope, J. A. Clark, H. A. Rodenhiser, T. R. Stanton, H. B. Humphrey, and A. C. Dillman of Washington, D. C.; Dr. T. A. Kiesselbach, University of Nebraska, J. C. Hackleman, University of Illinois, and J. H. Parker, Kansas State College, Manhattan, Kans., and Dr. Shen.

TEXAS

Texas Agricultural Substation No. 4, Beaumont (Rice Production and Improvement, H. M. Beachell)(July 24) Field work at the Station has progressed satisfactorily. Early-maturing varieties sown in nursery plots began to head on July 11. Varieties such as Early Prolific, Lady Wright, and Edith are about 75 percent headed at this writing. The nursery experiments are about 2 weeks farther along than they were at this time last season. Colusa, Early Prolific, Lady Wright, and Edith, sown in replicated field plots, are from 25 to 50 percent headed.

C. I. no. 7689, one of the patna varieties sown on March 1 and limited to 11 hours of sunlight since June 12, began heading on July 14. This variety has been crossed with Colusa, Edith, and Storm Proof. A very good set of seed was obtained in all three of these crosses. As soon as pollen is available other crosses involving this variety and early-maturing, slender-grain varieties will be attempted. C. I. no. 7482, another patna variety that was given similar treatment, began heading July 23.

So far the precipitation for July has been 15.03 inches. On July 22, 23, and 24, 13.79 inches of rain fell. This heavy rainfall has not injured the rice experiments, but highland crop experiments on the Station no doubt will be damaged considerably. Prior to July 22 it was rather dry throughout this section. The rainfall in June was slightly lighter than usual.

Dr. Tullis and Mr. Adair were visitors at the Station on July 11 and 12.

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(July 31) The maximum temperature in July was 108°; minimum, 63°. The precipitation was 4.11 inches.

The weather was extremely dry and hot in July until toward the end of the month. On July 30 a rain of 3.49 inches was recorded. There were no effective rains prior to this. Corn and feed crops were severely injured bythe drought and cotton was injured to a lesser extent.

All threshing of small grains was completed in July. Yields of wheat in the nursery were similar to those of field plots, ranging from 11 to 39 bushels per acre. The quality of the grain was good. Only four cooperative varietal tests were harvested in the hard-wheat belt. In these tests Termarq, Kanred, and Blackhull averaged 10.2, 9.7, and 9.0 bushels per acre, respectively.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(Aug. 1) It was not so hot the last half of July as it was earlier in the month. Three rains totaling 1.80 inches were recorded in the middle of the

month and caused the seeds in the soil to germinate. This gives two sizes of plants in the grain-sorghum plots that were seeded June 14. It is doubtful if the younger plants will mature grain.

Planting done on July 17, after the rains, gave good stands but growth appears slow. Only quick-maturing varieties were planted and it is realized that they have none too much time to mature. Black Spanish broomcorn in the first-date plots is heading.

Conditions for feed crops in this section are poor and the late-sown crops will soon need rain.

The maximum temperature for the last half of July was 101° on the 21st; minimum, 58° on the 27th. The precipitation for July was 1.87 inches.

KANSAS

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (Aug. 7) The spring and early summer in the south central and southern Great Plains area was generally unfavorable for the growth and development of small grains. Practically no moisture fell during the winter, and the early spring months were marked by a series of destructive dust storms. In addition to injury from these sources, all small grains were further injured by unusually high temperatures in early June. As a consequence, winter wheat ripened fully two weeks earlier than usual. At Manhattan, the temperature rose to a maximum of 109° on June 10 and both wheat and oats were badly burned. Harvesting in the experimental plots was under way on June 15 and nearly completed by June 25.

The yields of winter wheat at Manhattan appear to be about one-half to two-thirds those of last year and much of the grain is somewhat shriveled. In southwestern Kansas yields are very low and a considerable acreage of wheat was not harvested. In general the yield of winter wheat was rather poor throughout the western two thirds of the State; occasional fields or localities in which the yields were nearly normal were interspersed. The rainfall was nearly normal in the eastern third of the State and small grains were normal in field appearance and yield.

The drought continued until July 7, when it was broken by a 3-inch rain, the heaviest since September 1931. About four inches of rain fell in July, and corn and sorghum that had managed to survive the drought were greatly benefited. Corn in the river valleys in the vicinity of Manhattan looks very well, although it is again beginning to need rain badly.

Very little rust of any kind developed on cereals in the Plains area this year. Leaf rust of wheat could not be found in the vicinity of Manhattan until May 25. Spread of infection was effectually stopped by burning of the leaves early in June. For the first time since 1924 there was not enough leaf rust in the nursery to give satisfactory readings. Stem rust was absent from wheat until a few days before harvest and entirely absent from oats. Crown-rust infection was observed in only occasional spots in fields and experimental plots. It could be found on the lower leaves of oats growing in low spots in early June, but its spread was very promptly stopped by hot, dry weather.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis) (Aug. 2) A rainfall of 1.22 inches was recorded on July 14. This enabled the prosos to emerge to good stands on all plots. They are making rapid growth. Sorghums are heading in the varietal test, but they need rain badly.

Harvesting of the winter wheat in the nursery and in the varietal experiment was completed on July 27.

Visitors in July were Dr. D. W. Robertson of Fort Collins and Dr. K. S. Quisenberry of Washington, D. C.

The maximum temperature for July was 100°; minimum, 55°. The precipitation was 2.01 inches.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden) (Aug. 2) The commercial small-grain crop in this section of South Dakota is a total failure as a result of the extreme drought and heat throughout June. There were 15 days when the temperature reached 100° or over, and only 4 days when the temperature did not reach 90°.

Light rains and fairly cool weather in the first half of July favored the growth of corn and other fodder crops. Drought accompanied by extreme heat during the latter part of July destroyed the corn ear crop and severely injured late fodder crops. However, there are good crops of Russian thistles and grasshoppers. The thistles in some of the abandoned grain fields are being cut for hay, and on some farms efforts are being made to harvest the grasshopper crop for poultry and hog feed.

The small-grain plots on the Station were a complete failure this year, with the exception of the spring-wheat varieties on fallow and two varieties of barley, Dryland and Vaughn, on fallow. Only a few varieties of wheat produced grain in the nursery. However, the late-sown, spaced wheat-hybrid material was kept alive through June by frequent irrigations, and succeeded in filling somewhat during a cool period in July. But it was an almost hopeless task to save this material from the grasshoppers and gophers that come in from all directions. Although harvested while still quite green, at least half of the heads had been cut off by the hoppers and gophers. Approximately 1,000 hybrid oat strains grown in 5-foot rows that were blighted by the June heat made a second growth in July and produced some seed.

The writer recently invented a device that can be attached to the front bumper of a car and that makes a very satisfactory "hopper harvester". It has a capacity of about five acres per hour, and has harvested as high as four bushels of hoppers per acre. The device has created considerable interest, and several farmers are now building similar machines. The hoppers are being cleaned out of the station roads for the second time today with this outfit.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr. (Aug. 1) Drought and heat prevailed in the last half of July. The rainfall to date (January to July, inclusive,) is 2 inches below normal. The evaporation recorded in June and July was about 2-3/4 inches above normal.

Flax has ripened rapidly and somewhat prematurely. Harvesting of the varietal plots and most of the nursery rows should be completed this week. Late sown flax was severely injured by drought. Some late varieties in the late seedings apparently have not had sufficient moisture to start blooming.

Neither flax rust nor pasmo has been noted to date.

The differential responses of flax strains to the prevailing drought conditions this season apparently afford an exceptionally favorable opportunity to select for drought resistance.

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (Aug. 1) Hot, dry weather continued through July and brought on much preripening of grain and an early harvest. Harvesting of the wheat, oat, and barley varieties in plots was completed on July 24. Nursery rod-row harvesting will be completed by August 3 and threshing operations will be started early next week. Yields of varieties in plots are expected to be very low, although nursery yields should be only slightly below normal. The hot, dry summer should make yield differences of special interest this year, as high yields probably will be a fairly reliable index of varieties having a high degree of ability to withstand drought.

The maximum temperature in July was 103° on the 26th and 28th; minimum, 46° on the 20th and 22d. There was a rainfall of 1.8 inches in July, which is nearly an inch below normal.

Dr. K. S. Quisenberry and Mr. T. R. Stanton were Station visitors in the last half of July.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(Aug. 1) Hot, dry weather prevailed during most of July, relieved occasionally by a few showers and cooler weather. The only rain of importance was 0.90 of an inch that fell on July 4. The maximum temperature for the month was 104° on the 26th.

The harvesting of cereal field plots was completed yesterday with the exception of late seedings of flax and varieties of corn. Harvesting of the nursery is complete with the exception of proso, late flax, and wheat hybrids.

Harvesting is well advanced in the vicinity. The threshing of rotation plots began today but was interrupted by rain. Crop yields will be light.

Grasshoppers are very numerous in spite of considerable poisoning with bran mash. Little damage has been done by hoppers at the Substation, except on corn. Considerable damage is reported from nearby localities.

Some of the official visitors at the Substation in July were Messrs. Clark, Stanton, Quisenberry, Rodenhiser, and Dillman; Director Trowbridge and Dr. Waldron of Fargo; and Supt. Thompson of the Edgeley Substation.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(July 31) The uniform oat nursery has already been cut, and early wheats in the nursery and varietal field plots are ripe. Grasshopper injury to the cereal experiments has been limited to stripping of the leaves. Poison bran bait has been put out at regular intervals and large numbers of hoppers have been killed, although many still remain owing to lack of poisoning in the surrounding territory and to migration into the greener nursery material.

Leaf-rust infection is moderate but stem-rust infection is very light, differential readings of value being available only on the later seedings.

The harvest of small grains is coming on about one week earlier than in 1932. Wheat harvest will be general in another week. Feed crops are badly damaged by grasshoppers and drought and are already being cut, in many cases with a mower. Yields will be light and will show up the results of good farming practices even more markedly than in recent dry years. Straw will be short and light, the leaves having been stripped by hoppers.

Temperatures in July have been high, the mean being about 4 degrees above normal, while the precipitation, 1.17 inches, has been less than half normal. The precipitation since August 1, 1932, has been 15.73 inches, as compared with an average annual precipitation of 18.70 inches.

Visitors in July were Messrs. Waldron, Clark, Humphrey, Butler, and Sumner.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (Aug. 1) Harvesting of the small-grain plots was started July 23 and has continued steadily up to the present time. Oats and barley reached maturity 84 days after seeding owing to the absence of normal rainfall in June and July. The barley and oat varietal plots have been threshed and the barley nursery will be threshed within a few days. This is the earliest harvest in the memory of the workers now at the station.

Station visitors included Dr. P. A. Young of the Montana Experiment Station, and Dr. H. A. Rodenhiser, Dr. K. S. Quisenberry, and Mr. J. A. Clark of Washington, D. C. Dr. Quisenberry will prepare seed for the uniform smut and winter-hardiness nurseries while at the Station.

The maximum temperature was 102°; minimum, 44°. The precipitation was 0.29 of an inch. The maximum temperature of 102° is an all-time record for this Station, while the precipitation of 0.29 of an inch is a new low record for the month of July.

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, Harland Stevens) (Aug. 1) July was a very hot month here, and the nurseries and plots are ripening fast but not abnormally so. All grain is well filled and should produce some very good yields. Barley plots are harvested and most of the barley nursery. Strong winds during the middle of July caused severe lodging in the barley nursery but very little in either oats or wheat.

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin)(Aug. 1) Threshing of the nursery was practically completed last week but the varieties in field plots have not yet been threshed.

Harvest is now well under way in the Columbia Basin and has been completed in some sections. Yields are very low on the shallower land but are running from 40 to 50 bushels per acre in the more productive areas.

Although grain was ripened rapidly by the hot weather in the latter half of July it was reasonably plump with the exception of that from late-spring sowing.

The maximum temperature for July was 103° on the 24th. A maximum of 100° or more was reached on 6 days in the month.

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague)(July 26) Records were taken on the Cercosporella foot rot plot on High Prairie, Wash., on July 21 and 22. As a result of the severe freeze of last December definite information was obtained on both winter survival and resistance to foot-rot. The hybrids and varieties of wheat most resistant to foot rot as well as satisfactorily winter hardy for this region were Albit x Hohenheimer (F_4), Turkey wheat x Rosen rye (F_4), and Hybrid 128. It is possible that a segregation from the first mentioned cross will be fixed, approximating Hybrid 128 or Albit but having slightly shorter straw. It appears to be about 80 percent as susceptible to foot rot as Hybrid 128, which is at present the most satisfactory wheat to grow in the Cercosporella foot-rot area. All of the Kansas wheats were badly injured by the disease and were discarded. In the inoculated plot at Corvallis, a wheat x rye hybrid by Meister was almost immune.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (Aug. 1) Dry, hot weather continued through July, making a total of 68 days since any appreciable moisture fell. On July 27 the maximum temperature was 103°. Some burning is noticeable in grains not yet ripe, although in general crops on the irrigated lands are very promising.

The barley nursery and most of the oat nursery have been harvested. There was considerable lodging in the barley nursery but very little in either the wheat or oats. The spring-wheat and oat nurseries promise very high yields.

Harvesting of the winter-wheat nursery is nearing completion and threshing will commence in a few days. Yields will be low owing to lack of moisture and the unfavorable spring.

Corn and grain sorghums have grown remarkably well, as the season has been very favorable for this type of crop. Some of the grain sorghums are well headed out.

There is very little bunt (stinking smut) in the section of Cache Valley, where bunt is usually prevalent. One of the resistant hybrids, Hussar x Turkey, has replaced the Kanred and Goldcoin in these sections. Volunteer Kanred shows almost 100 percent infection in the same fields.

The mean maximum temperature for July was 92°, the minimum, 54°. The mean temperature for the month was 73°. The precipitation totaled 0.34 of an inch in four light showers.

Messrs. B. B. Bayles, S. C. Salmon, H. V. Harlan, and F. A. Coffman were visitors in July.

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel) (Aug. 1) The mean maximum temperature for July was 101.6; the mean minimum, 75.8; maximum 106.0. The precipitation was 1.60 inches, almost 1 inch below normal.

Dr. S. C. Salmon was a station visitor on July 25 and 26.

The yields of wheat varieties grown in three 1/36th-acre plots at Mesa, Arizona, are as follows:

Variety	C. I. no.	Av. yield (Bu. per acre)
Irwin Dicklow	8855	55.6
South African	--	51.8
Jenkin	5177	51.4
Dicklow x Federation	11408	50.8
Onas	6221	50.0
Baart	1697	49.2
Hard Baart	8274	48.8
Pacific Bluestem	4067	46.0
Marquis	3276	43.0
Federation	4734	41.0
Escondido	6240	39.6
Hard Federation	4733	38.4
White Federation	4981	37.4
Pusa	8899	35.4

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 25 August 25, 1933 No. 13
Personnel (Aug.11-25) and Field Station (Aug. 1-15)

PERSONNEL ITEMS

Mr. F. D. Richey returned on August 23 from a trip in Louisiana and Tennessee in the interests of cooperative corn experiments.

MANUSCRIPTS SUBMITTED

43. Chromosome Numbers in Flax (Linum). A. C. Dillman. Aug.15. Science.
44. Twisting of the Rachis of Wheat Heads Favored by Short Daily Photoperiods. H. H. McKinney and W. J. Sando. Aug. 19. Jour. Heredity.

RECENT PUBLICATIONS

Inheritance of Stem-Rust Reaction in Wheat. J. Allen Clark and H. B. Humphrey. Jour. Amer. Soc. Agron. 25(8): 497-511, figs. 1-3. August 1933.

Effect of Fertilizers on the Yield of Rice Grown in Pots. Jenkin W. Jones. Jour. Amer. Soc. Agron 25(8): 548-554. August 1933. (Cooperation between the Division of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

Selenium as an Insecticide. E. M. Nelson, A. M. Hurd-Karrer, and W. O. Robinson. Science 78(2015): 124. August 11, 1933.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer) (Aug. 12) The season has been unfavorable for corn. Because of the hot, dry weather in June and July early corn was seriously injured. The July 1 crop index for corn at 68 percent has been materially improved by rains in early August, and the late corn will be satisfactory. The yield test of double crosses and varieties has come through fairly well, although a heavy rain, accompanied by high wind, caused considerable lodging. There promises to be ample seed of selfs and crosses for future needs.

The East Tennessee Farmers' Convention was held at the Station August 3 and 4. Dr. C. W. Warburton, Director of Extension, was one of the speakers. On August 10 the Secretary of Agriculture inspected some of the Station work.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(Aug. 15) The first half of August was favorable for crop production, but summer row crops are so late that even good conditions may fail to mature the crops.

The sorghums planted after the July rains have been thinned and cultivated and are making rapid growth. This year will be a good one in which to make observations on late-planted sorghums.

Several plots of broomcorn will be ready to harvest this week. Sowed feed (sorghums) for hay is growing rapidly and probably will furnish considerable feed in this section.

Maximum temperature for the first half of August 106° on the 9th; minimum, 63° on the 3rd and 4th. The precipitation was 2.43 inches in three rains.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker)(H. H. Laude)(Aug. 15)

Average yield of winter-wheat varieties grown in triplicated plots at the Agronomy Farm, Manhattan, Kans., 1933

Variety	C. I. no.	Kansas no.	Yield (Bu. per acre)
Hard Red Winter			
Early Blackhull	8856	483	37.6
Oro	8220	495	36.3
Turkey	1558	570	36.1
Cooperatorka	8861	499	36.1
Blackhull	6251	343	35.5
Cheyenne	8885	2667	35.0
Quivira	8886	2628	34.3
Kharkov	1442	2591	33.0
Kanred x Hard Fed.	10092	2673	32.8
Kanred(Av.4 checks)	5146	2401	32.5
Nebr. No. 60	6250	322	31.5
Kharkov (Hays No.2)	6686	2659	31.4
Tenmarq sel.	10089	2670	31.4
Kanred x Marquis	--	2690	31.3
Kanred x Hard Fed.	11373	2671	31.2
Do.	10091	2672	29.6
Tenmarq	6936	514	28.8
Kanred x Marquis	10090	2644	28.5
Minturki	6156	2464	28.4
Soft Red Winter			
Kawvale	8180	2593	46.0
E. G. Clark No.40	--	505	45.8
Kanred (check)	5146	2401	44.8
Fulcaster	6471	317	44.5
Harvest Queen	6199	19	37.1

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(Aug. 16) Threshing of wheat, oats, and barley in the rod-row nursery was started August 5 and completed August 15. The yields were satisfactory. Wheat, oat, and barley varieties in plots were harvested but only a few of the more promising varieties were threshed. The grain from three 50th-acre plots of any one of these did not total two pounds. Less than 50 grams of grain was obtained from several of the less promising varieties.

Weather conditions were very favorable for threshing. There was 0.22 of an inch of rain on August 1. A trace was recorded on four other days of the first half of August. The total precipitation at the Station is now more than 3 inches below normal. The maximum temperature was 98° on August 5, the minimum 50° on August 13, and the mean 72°.

Dr. S. C. Salmon was a Station visitor on August 11 and 12.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)(Aug. 17) The hot, dry weather continued throughout the first half of August.

The flax varietal nursery was harvested August 3 and the varietal and increase plots on August 4 and 5. Most of the flax nursery on flax-sick soil was harvested on the 10th and 11th. The safflower plots and final seeding of the seed-treatment experiment will be harvested to-day or tomorrow, leaving only the last three harvests of the after-ripening-loss experiment and some late-sown flax material still to be harvested.

The flax varietal plots in triplicate and increase plots were threshed August 16, but yields will not be available until the seed is cleaned. Some seed shelled out before threshing on account of wider dehiscence of boll than usual, resulting from the continued drought and heat. Yields, however, probably will range between 2 and 5 bushels per acre. Threshing of the flax nursery material probably will be under way tomorrow.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(Aug.15) Continued hot and dry weather thus far in August has permitted threshing operations to proceed unhindered. Threshing is now completed except for plant rows. All yields are low, as expected, although test weights are fairly satisfactory in most grains.

The average wheat yields obtained from replicated 56th-acre plots are presented in the following table.

Official visitors this month have been Dr. C. E. Leighty and Mr. J. Allan Clark, Washington, D. C., Supt. J. M. Stephens, Mandan, N. Dak., and Mr. J. P. Conrad, of Davis, Calif.

Yields of spring-wheat varieties grown in replicated 56th-acre plots at the Dickinson Substation, 1933

Variety	C. I. no.	Nursery no.	Yield (Bu. per acre)
Hard Red Spring			
Komar	8004	--	13.2
Reliance	7370	--	11.8
Hope x Ceres	11428	1098	11.4
Ceres	6900	--	10.9
Red Fife	3329	--	10.8
Marquillo	6887	--	10.3
Supreme	8026	--	10.2
Hope	8178	--	9.9
Reliance x Hope	11433	1110	9.8
Haynes	2874	--	9.6
Reliance x Hope	11435	1131	9.3
Marquis	3641	--	9.2
Double Cross Minn. no. 2303	10003	--	8.1
Reward	8182	--	6.9
Durum			
Kubanka	1440	--	9.6
Monad	3320	--	9.0
Kubanka 132	8383	--	8.4
Pentad	3322	--	8.4
Kubanka 75-3-15	11476	--	8.1
Akrona	6881	--	7.4
Mindum	5296	--	6.9

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(Aug.15)
The summer has continued without precipitation during the first half of August and the small grains have ripened somewhat more rapidly than usual.

Most of the nursery has been harvested though none of it has been threshed. Wheat varieties in field plots were threshed to-day. The yields are shown below.

Variety	C.I. no.	Nursery no.	Yield (Bu. per acre)
Hard Red Spring			
Ceres	6900	--	20.4
Komar	8004	--	20.0
Marquis	3641	--	19.8
Double Cross Minn.2305	10005	--	16.2
Hope x Ceres	11428	1098	16.0
Double Cross Minn.2303	10003	--	15.8
Marquillo	6887	--	15.7
Reliance x Hope	11433	1110	15.7
Do.	11435	1131	15.6
Hope	8178	--	15.0
Hope x Ceres	11432	1127	14.4
Reliance	7370	--	14.3
Reward	6182	--	14.0
Supreme	8026	--	13.0
Durum			
Kubanka	1440	--	14.4
Kubanka 75-3-15	11476	--	13.9
Kubanka 132	8383	--	12.8
Mindum x Pentad	8882	--	12.6
Mindum	5296	--	12.5
Mindum x Pentad	10006	--	12.3
Kubanka 75	11541	--	11.9
Golden Ball	11477	--	11.3
Monad	3320	--	7.6

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (Aug. 15) With the exeeption of the very best material, harvesting and threshing of nursery and field plots is completed. Yields of all grains were below average. Spring wheat and oats produced the best yields.

A few farmers in this locality are seeding winter wheat regardless of the lack of soil moisture and the danger of injury to the young plants by grasshoppers. Summer fallow fields are very loose and dry and a soaking rain is needed to put sueh fields in good eondition for fall seeding.

Dr. K. S. Quisenberry left on August 14 after spending several days here in the interest of the winter wheat program.

C E R E A L C O U R I E R

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Bureau of Plant Industry, U. S. Department of Agriculture
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Vol. 25 Sept. 10, 1933 No. 14
Personnel (Aug.26-Sept.10) and Field Station (Aug.16-31)

1933

PERSONNEL ITEMS

Mr. C. E. Chambliss spent several days in August in the Finger Lakes region of New York, collecting specimens of wild rice and studying conditions under which the plant grows there.

Dr. Charlotte Elliott is spending three weeks in the vicinity of Bloomington, Ill., and Garden City, Kans., to take notes on cooperative field experiments with bacterial wilt of corn and milo diseases.

Mr. F. D. Richey is making his usual summer trip during the preharvest period for the inspection of cooperative corn experiments and to discuss results with cooperators and Division personnel and develop plans on the basis of results appearing during the current season. His stops include Bloomington, Ill., Madison, Wis., St. Paul and Waseca, Minn., Ames, Iowa, Manhattan, Kans., La Fayette and other points in Indiana, and Wooster and other points in Ohio.

MANUSCRIPTS SUBMITTED

45. The Association of Cercosporella herpotrichoides Fron with the Festuca Consociation. Roderick Sprague. Aug. 24. Phytopathology.

46. Developmental Anatomy and Homologies in Wheat (Triticum vulgare Vill.) M. A. McCall. Aug. 29. Jour. Agr. Research.

47. Effect of Failure of Pollination on Composition of Corn Plants. A. M. Brunson and W. L. Latshaw. September 9. Jour. Agr. Research.

RECENT PUBLICATIONS

Winter Wheat Varieties in Nebraska. T. A. Kiesselbach, Arthur Anderson, and C. A. Suneson. Nebr. Agr. Expt. Sta. Bul. 283, 24 p., illus. July, 1933. (Cooperation between the Nebraska Agricultural Experiment Station and the Division of Cereal Crops and Diseases since 1930.)

Further Cytological Studies of Heterothallism in Puccinia graminis. Ruth F. Allen. Jour. Agr. Research 47(1): 1-15, pls. 1-6. July 1, 1933. (Cooperation between the Division of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

Inheritance of Reaction of Wheat to Physiologic Forms of Tilletia levis and T. tritici. William K. Smith. Jour. Agr. Research 47(2): 89-105, illus. July 15, 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Washington Agricultural Experiment Station.)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)(Aug.31) Following a total precipitation of some 6.24 inches in 36 hours, the Potomac River rose to flood heights on the night of August 23 and submerged the "flats" at the Arlington Experiment Farm to a depth ranging from 2 to 6 feet. All of the experimental corn was under water, much of it completely submerged. The levee was cut on August 24 which got rid of most of the water, but it continued to occupy the low spots until about August 26. As a result of these conditions, together with a wind on the 23rd, estimated at from 40 to 50 miles per hour, the corn experiments were practically ruined. Seed of some kind will be obtained from most of the earlier pollinations, but it is immature and much of it smells more like silage corn than seed corn. How much will grow is problematic. Later pollinations are being harvested and dried in the hope that something can be obtained that will at least grow. Yield trials will mean very little because of the tremendous amount of breakage and down corn which

will tend (1) to make the earlier silking sorts yield more than the later where both were broken, and (2) to make the sorts that did not break quite so badly produce the largest yields. Even notes on lodging resistance will mean little except for one or two lines which were so outstanding in this respect as to permit their hybrids to tolerate even these severe conditions.

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)(Sept. 7) The maximum temperature in August was 95°, the minimum, 70°. The precipitation of 2.63 inches is much below the normal for August.

The lack of rainfall did not cause a shortage of irrigation water because of the extremely heavy rainfall in July. There was much cloudy, damp weather, which interfered with the threshing of early rices. By the end of the month, however, most of the Early Prolific had been threshed. The acreage of this variety is small in the State this season.

About 1,000 acres were planted to Shoamod rice in the Crowley area. Most of this had been harvested by the end of the month and some had been threshed. The indications are that satisfactory yields will be obtained.

Work on the station progressed normally. Most of the early maturing plots had been harvested. Cotton was picked in the general fertilizer, varietal, potash, and phosphate plots. Rice in commercial fields and on the station is much more vigorous and healthy than at this time last season.

Among the visitors at the Station in August were Director C. T. Dowell and Dr. H. B. Brown, of Baton Rouge, and Messrs. H. M. Beachell and R. H. Wyche of Substation No. 4, Beaumont, Texas. Mr. J. W. Jones, of Washington, D. C., arrived on August 8 to study the cooperative experiments. Mr. N. E. Jodon, who has been transferred from North Platte, Nebr., arrived on August 15 to assume his duties as a member of the Station staff.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus)(Sept. 2) The weather continued dry during the month of August. The total rainfall was 1.09 inches, 0.81 of an inch of this being recorded on August 2. The normal rainfall for August is 3.12 inches.

The maximum temperature for the month was 93° on the 10th; minimum, 50° on the 28th.

Threshing of all small grains has been completed. Yields of spring wheat will be low and the grain badly shriveled. The yield and quality of the winter wheat at the Waseca station are satisfactory. No yields were obtained on the winter wheat grown at University Farm owing to severe winter-killing. Some varieties in the nursery were entirely killed. Plans have been made and seed prepared for the fall seeding of winter wheat at University Farm and Waseca.

Corn is maturing rapidly and silos are now being filled.

Dr. S. C. Salmon of Washington and Mr. R. Ramella of Argentina were visitors at the Station in August.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)[Sept. 2] The precipitation of 3.70 inches in August was well above the needs of the season. Some delay in preparing seed beds for small grain was caused by wet soil. Cotton started renewed growth and insects have caused some damage.

The temperatures in August were fairly uniform and averaged slightly below normal. The maximum temperature was 98°, the minimum 66°.

Nearly all seed beds for experimental plantings of grain have been prepared. Work was done in August on experiments concerned with shattering and strength of straw.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(Sept. 2) The last half of August was favorable for growth of sorghums and other late crops. Broomcorn in the first date-of-seeding experiment has been harvested and that in the later dates is maturing rapidly. Of the grain sorghums planted after the rains of July, Sooner milo is heading and should mature grain under favorable conditions.

Those plants of the varietal sorghums which emerged in June are headed and heading, and some seed heads will be bagged for next year. The scattered stands will produce rather poor yields.

The maximum temperature for the last half of August was 93° on the 18th, the minimum, 56° on the 30th. The precipitation was 2.35 inches, or a total of 4.78 inches for August.

COLORADO

United States Dry Land Field Station, Akron (Wheat Improvement, J. J. Curtis)[Aug. 28]

Acre yields of oat varieties grown on fallow and on cornland at Akron, Colo., 1933

Variety	C.I.No.	Yield 4-plot av.[1]	Variety	C.I.No.	Yield 4-plot av.[1]
Early Red Rustproof	2823	17.2	Franklin	2892	8.8
Brunker	2054	16.7	Richland	787	8.8
Trojan	2491	14.7	Richland sel.52	3008	8.7
Kanota	839	14.6	Edkin	2330	6.5
Fulghum	708	13.7	Swedish Select	134	2.0
Columbia	2820	12.8	Colorado No. 37	619	1.5
Kherson	459	9.1			

[1] Two plots on fallow; 2 on cornland.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(Sept. 1) The uniform winter-wheat nursery was sown on September 1. The soil was very dry, although it had been in clean fallow all summer, and the varieties are not expected to germinate until there is rain.

Only 0.41 of an inch of rain fell in August. The precipitation is now more than 4 inches below normal for the year and more than an inch below normal for August. The maximum temperature in August was 98°; the minimum was 41° on August 27.

As the yields in the plot experiments were nearly a failure this year, the yields of the uniform hard red spring wheat nursery, shown in the following table, will be of interest.

Average yield and test weight of hybrids and varieties in the uniform hard red spring wheat nursery grown in triple rod rows replicated three times at Mandan, N. Dak., 1933.

Variety	C.I.no.	Nursery no.	Yield[1] (Bu.per acre)	Test weight per bu.
Kota x Webster	11462	H-151	12.9	53
Do.	11463	H-209	9.3	59
Double Cross, Minn.2315	10020	--	9.2	60
Ceres	6900	--	8.7	57
H-44 x Marquis	11551	Sel.1552	8.6	58
Marquis-emmer x Kota-Webstor	11430	1087	8.4	58
Double Cross, Minn. 2316	10021	--	8.3	58
Marquis	3641	--	8.1	56
Penfad x Marquis	11475	R. L. 729	7.6	57
Reliance x Hope	11433	1110	7.5	58
Double Cross, Minn.2307	11485	--	7.4	58
Reliance x Hope	11435	1131	7.4	57
Hope x 1656.97	11471	N.D.2421	7.3	60
Hope x Ceres	11428	1098	7.2	58
Kota x Marquis	11549	--	7.2	60
Marquis x Kota	11468	1656.106	6.7	60
Ceres x Hope-Florence	11550	2557	6.6	57
Marquis x Kanred	11548	--	6.6	60
H-44	8177	--	6.1	58
Double Cross, Minn.2340	11487	--	5.7	59
H-42 x Marquis	11473	Sel.1280	5.3	56
Marquis x Kota	11469	1658.178	5.2	--
Marquis x Hard Federation	11464	649	4.2	56
Reliance x Hope	11434	1121	1.5[2]	59
H-44 x Marquis	11474	R. L. 592	0.0	--

[1] An average of 9 rows. [2] An average of 3 rows.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)(Sept. 1) The drought continued throughout the last half of August, although temperatures averaged slightly below normal.

The flax harvest is completed with the exception of the last two harvests of the after-ripening-loss experiment. Most of the flax nursery is threshed and the remainder is under cover.

The flax plots were threshed in the old nursery thresher, which was not so satisfactory as the large machine, as more bolls went through unthreshed. The loss from this cause was estimated as about 10 percent.

Acre yields of 19 hybrids and varieties of flax grown in plots.

Variety	C.I.no.	Yield (Bu.per acre)	Variety	C.I.no.	Yield (Bu.per acre)
H-10-2-59-3	739	3.4	Redwing	499	2.3
N. D.40034 (B 444)	491	3.3	N. D. R. 114	13	2.2
Bison	389	3.3	Hyb. 160 x 179	496	2.1
Nat. Hyb.	744	3.3	Hyb. 19 x 112	478	2.1
Sib. no.206	473	3.2	Sel. 167 - 254	475	2.0
Hyb.160 x 179	745	2.9	Rio	280	1.8
Buda	326	2.9	Sel. of C.I.119	474	1.6
Buda sel.	737	2.8	Walsh	645	1.5
Linota	244	2.5	B. Golden	644	1.1
			L. Golden	735	0.6

Acre yields of 7 hybrids and varieties of flax grown in drilled plots and in 3 cultivated rows 28 inches apart.

Variety	C.I.no.	Yield (Bu. per acre) Drilled	Cultivated	Av.
Bison	389	2.9	5.4	4.2
Arg. 1-25-70	407	2.5	5.4	4.0
Hyb. Buda x (19x112)	742	1.8	5.4	3.6
Hyb. 1-1-51-2	738	1.6	5.4	3.5
Hyb. Buda x (19x112)	740	1.8	4.7	3.3
Hyb. (19x112) x 19	743	2.0	4.5	3.3
Hyb. Buda x (19 x 112)	746	2.2	4.2	3.2
	Av.	2.1	5.0	3.6

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(Aug.31) The precipitation in August has been negligible. Harvest of all late hybrid material in the nursery has been completed and threshing will be begun at approximately the normal date.

Grasshoppers have been numerous all summer but they did no more damage to the nursery experiments than in 1932. Very little poisoning was done in this section and the hoppers undoubtedly are laying large numbers of eggs.

Proso millets are ripe and are being cut today. They did not do so well as in the past 2 years.

Owing to the slight rainfall there has been hardly any interruption in harvest or threshing operations in this part of the State. Threshing is nearly done. Yields are as high as 10 bushels an acre. In an adjoining county yields of wheat up to 25 bushels have been reported.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (Sept. 1) Heavy rains occurred during the last half of August and fallow land is now in good condition for seeding.

All harvesting and threshing on the Station has been completed. Seeding of plots and nursery will be completed within another week.

Farmers in this vicinity are seeding winter wheat as rapidly as possible. Cold weather has followed the rains of the last 2 weeks and checked the ravages of grasshoppers for the present, but very few of the insects have been killed.

The maximum temperature in August was 92° on the 14th and 18th; minimum, 41° on the 31st. The precipitation was 3.38 inches.

Northern Montana Branch Station, Havre (M. A. Bell)(Sept. 6) Yields of spring-wheat varieties grown on fallow in triplicated 1/50th-acre plots at Havre, Mont., 1933.

Variety	C.I.no.	Nursery no.	Yield (Bu.per A.)
Hard Red Spring:			
Marquis x Hard Federation	11464	649	20.6
Do.	-	708	19.7
Komar	8004	-	19.7
Supreme (Havre sel. 66)	-	-	19.6[1]/
Marquis	3641	-	19.4
Reliance	7370	-	19.2
Supreme (Havre sel. 59)	-	-	19.2[1]/
Reliance x Hope	11434	1121	18.9
Ceres	6700	-	18.8[1]/
Red Bobs (Univ. 222)	-	-	18.8[1]/
Supreme	8026	-	18.6
Kota-Hard Federation x Kanred-Marquis	-	1071	18.4[1]/
Marquis x Hard Federation (Havre sel.649-6477)	-	-	17.9[1]/

Variety	C.I.no.	Nursery no.	Yield (Bu.per A.)
Double Cross, Minn. 2303	10003	-	17.2
Hope	8178	-	16.7
Marquillo	6887	-	16.4
Reward	8182	-	12.9 1/
White:			
Baart	1697	-	22.0
Federation	4734	-	17.8
Durum:			
Kubanka	1440	-	18.6
Peliss	10001	-	17.8
Mindum	5296	-	16.4

1/ Average of only 2 plots because of shortage of seed or damage by gophers.

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, Harland Stevens)(Sept. 2) Threshing of the plots has been completed and that of the nursery is almost done. The yield of oats was slightly above the average and that of wheat slightly below. The yield of barley was lower than the average owing to hot weather at heading time and shortly after and also because of poor soil. The highest acre yields obtained from these three grains is as follows: Markton oats, 142 bushels; Irwin Dicklow wheat, 59.8 bushels; and Trebi barley, 69.4 bushels.

The temperatures for August were normal, the mean maximum being 87.1° and the mean minimum, 47.7°. There was but 0.05 of an inch of rainfall, which was somewhat below normal. There was no frost, the lowest temperature being 36°.

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin)(Sept.1) Threshing of field plots was completed on August 8. Yields of winter-wheat varieties in replicated plots ranged from 32.1 to 46.8 bushels. Federation produced more grain than the other varieties when sown in January. Oro and Kharkof gave the best yields in the varietal trial sown in the fall, because many varieties that ordinarily give high yields were winterkilled. White Federation ranked first in the spring-wheat experiment, yielding 46.2 bushels. Onas and Federation were next. Among the spring barleys, Trebi, Peruvian sel. 1 and Flynn sel. 1 all produced more than 70 bushels per acre.

The rainfall in August amounted to 0.49 of an inch. Farmers reported that the rain on August 3 and 4 reduced test weights of wheat from 1/2 lb. to 1-1/2 lbs. per bushel. The maximum temperature was 104° on August 14. Hot dry weather prevailed during most of the harvest season.

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens) (Aug. 29) Harvesting of wheat in the Columbia River Basin of Oregon is about completed. In most sections yields were higher than expected. In northern Sherman County, where the moisture loss from early spring run-off was not great, the wheat yields were about normal, although the crop was nearly all spring wheat. Severe winterkilling necessitated the reseeding of more than 90 percent of the winter wheat in the Columbia River Basin of Oregon. In most instances the reseeded spring wheat, nearly all of which was Federation, outyielded the thin stands of winter wheat in a few fields left by farmers. Yields of from 12 to 35 bushels per acre are being reported by farmers. The average wheat yield for Sherman County will be about 18 bushels per acre.

The total precipitation at Moro for the crop year of 1933 (Sept. to August, inclusive) was 9.51 inches; only 1.98 inches fell in the 4-month period from April to July.

There were no unusually high temperatures during the season until after wheat was ripe. The hottest weather for the summer was from Aug. 7 to 17. During that period there were 4 days with temperatures of 100° or more, the highest being 101° on the 15th and 16th.

The following tables show the yields of the winter and spring wheat varieties this season. The winter-wheat varieties were all reseeded on Jan. 11 about 1/2 inch deep in a wet seed bed. The nursery trials, which were reseeded about the same time and about 1-1/2 inches deep, failed to emerge. In the plot experiments there was no emergence until the first week in April, the ground being frozen for nearly two months after seeding. In the varietal experiment, seeded on Oct. 27, two varieties -- Oro and Kanred -- were left. The yield of these two varieties from the October seeding with about 40 percent of a normal stand, was less than that from the January seeding.

The spring-wheat varieties, all of which had rather thick stands, suffered severely from drought and did not nearly attain their normal height. Both the yield and quality of the spring grains were better than expected.

Yield of winter wheat varieties grown in duplicate 1/20th-acre plots at Moro, Oreg., 1933

Variety	C.I.no.	Stand P.ct.	Yield (Bu.per A.)
Cheyenne	8885	70	20.4
Kharkof	1442	70	20.2
Turkey sel.	11424	70	20.0
Oro	8220	70	20.0
Hybrid 128	4512	70	20.0
Triplet	5408	70	19.5
Marquis x Kanred	11423	65	19.3
Kanred	5146	75	19.3
Golden	10063	75	19.0
Turkey sel.	11425	75	18.7
Turkey (local)	4429	60	18.5
Turkey	5171	70	18.4
P1068 x Preston	8244	70	18.4
Kharkof	8249	70	18.0
Federation	4734	45	17.7
Ridit	6703	70	17.2
Hybrid 128 x Fortyfold	10066	70	17.0
White Odessa	4655	75	17.0
White Odessa x Hard Fed.	10065	60	16.9
Rio	10061	70	16.7
Fortyfold x Federation	8247	50	16.3
Blackhull	6251	50	14.7
		Av.	18.3

Yield of spring wheat varieties grown in duplicate 1/20th-acre plots at Moro, Oreg., 1933

Variety	C.I.no.	Yield (Bu.per A.)	Variety	C.I.no.	Yield (Bu.per A.)
Hard Fed. sel.31	8255	21.7	Hard Fed. sel. 79	11420	19.7
Baart x Fed.	8254	20.6	White Fed.	4981	18.9
Onas	6221	20.4	Hard Fed.	4733	18.0
Hard Fed.sel.82	11421	20.0	Baart	1697	16.7
Federation	4734	20.0	Pacific Bluestem	4067	14.5
Hard Fed.	8256	19.7	Marquis	4158	14.3
				Av.	18.3

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, L. L. Davis)(Sept.1) High temperatures have caused rice in the Sacramento Valley to develop rapidly and at this date the stage of the crop is about normal. Rice was about 10 days later than normal in the spring and early summer.

All of the common varieties of rice on the Station have headed. The early standard variety, Colusa, C.I.1600, will be drained in a very few days. Harvest of this variety will begin about September 15. The harvest of Caloro probably will begin about October 1.

This year many of the commercial rice fields are badly infested with water grass (Echinochloa crus-galli) and water plantain Alisma plantago. The estimated average acre yield of rice for California is slightly less than that of last year.

The average maximum temperature for July and August was 101.1 and 96.9 degrees, respectively. The maximum temperature recorded this summer was 115° on August 14.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R.W.Woodward) (Sept. 1) Clear warm weather prevailed during August, permitting an uninterrupted harvest. All threshing of small grains with the exception of some from the counties has been completed. Yields have been generally satisfactory on all spring sown crops.

The season has been extremely dry, only 0.46 of an inch of rainfall having been recorded since May 22. The mean temperature was 67°F.

The season thus far has been favorable for corn and grain sorghums. At least 3 weeks more of frost-free weather will be necessary for these crops to mature.

OCT 6 - 1933
PLANT INDUSTRY

CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

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Vol. 25 Sept. 25, 1933 No. 15
Personnel (Sept. 11-25) and Field Station (Sept. 1-15)

PERSONNEL ITEMS

Mr. C. E. Chambliss left Washington on September 16 to visit points in Georgia, Florida, South Carolina, and Louisiana. He will collect milled rice for techniological studies, inspect patna rice introductions, and confer with officials of agricultural experiment stations, seedsmen, and millers on the utilization of rice, including Zizania.

Dr. J. G. Dickson attended the barley scab conference on September 20 and 21 at Dubuque, Iowa. This conference was called by Dr. R. J. Haskell, extension pathologist of the Department of Agriculture, for the purpose of laying plans looking toward the regional extension program on the control of scab, particularly in barley. Dr. Dickson later expects to spend a short time in Washington outlining plans for next year's work on the barley-disease program.

Dr. J. A. Faris passed on September 24 at the Emergency Hospital, Washington, D. C., following a major operation. Dr. Faris's loss both to the Division and to American plant pathology is almost incalculable. His pleasing personality, his energy, and his scientific insight and ability based on sound training made him one of the outstanding American pathologists in the field of the cereal smuts. His place as a scientist and as a friend will be difficult to fill.

Dr. Faris was born on a farm near Westboro, Atchison County, Missouri, July 27, 1890. He attended the country schools near his home and the high school at Tarkio, Mo. He was graduated from the Northwest Missouri State Teachers College at Maryville in 1913, received the degree of Bachelor of Science from the University of Missouri in 1916, his Master's degree from the University of Nebraska in 1920, and the degree of Doctor of Philosophy from Columbia University, New York City, in 1923.

During 1916-17 Dr. Faris was Professor of Botany and Biology at Stephens Junior College, Columbia, Mo., and during 1917-18 he was Professor of Botany at the City Junior College, St. Joseph, Mo. From 1918 to 1920, he was Pathologist in the Office of Cereal Investigations as State leader in barberry-eradication in Nebraska. From 1920 to 1921 he made investigations in Santo Domingo for the Dominican Government on diseases of economic crops of that country. From 1921 to 1924, he was Research Fellow of the National Research Council and the Brooklyn Botanical Garden, Brooklyn, N. Y. From 1924 to May, 1931, Dr. Faris was Chief Pathologist of the Tropical Plant Research Foundation and the Cuba Sugar Club and was stationed at Central Baragua, Cuba, where he served also as Assistant Director of the Sugar Planters Experiment Station. On June 1, 1931, Dr. Faris was appointed Senior Pathologist in the Division of Cereal Crops and Diseases, in charge of investigations of cereal smuts. This position he held until the time of his death.

His contributions both in the field of cereal smuts and the diseases of sugar cane are of very great importance.

Dr. K. S. Quisenberry returned to Washington on September 22 after a 5-day trip in Pennsylvania, New York, and West Virginia in the interests of buckwheat investigations. He conferred with officials of State agricultural experiment stations and millers on the production, improvement, and milling of buckwheat and collected samples from farmers' fields.

Mr. F. D. Richey left Washington September 19 for a two weeks' trip in Indiana and Ohio in the interests of cooperative corn investigations.

Mr. J. W. Taylor seeded the cooperative cereal nurseries at Manassas, Va., on September 25.

MANUSCRIPTS SUBMITTED

48. The Spermatia of Corn Rust, Puccinia sorghi. Ruth F. Allen. Sept. 20. Phytopathology (Phytopathological Notes).

RECENT PUBLICATIONS

Factors Affecting Experimental Error in Field Plots with Corn. A. A. Bryan. Iowa Agr. Expt. Sta. Research Bul. 163, p. 244-280. June 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Iowa Agricultural Experiment Station.)

Studies on Physiologic Specialization in Tilletia tritici and T. levis in the Pacific Northwest. H. H. Flor. Jour. Agr. Research 47(4): 193-213, figs. 1-6. Aug. 15, 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Washington, Oregon, and Idaho agricultural experiment stations.)

Effect of Depth of Submergence on the Control of Barnyard Grass and the Yield of Rice Grown in Pots. Jenkin W. Jones. Jour. Amer. Soc. Agron. 25(9): 578-583. September 1933. (Cooperation between the Division of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

Harvesting Varietal Plots of Winter Wheat with a Combine. (Note) Edmund Stephens. Jour. Amer. Soc. Agron. 25(9): 630-631. September 1933.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(Sept. 15) The weather of the first part of September has been unfavorable for field work. Because of the frequent rains and cloudy weather fields have been wet most of the time, and as a result there has been considerable delay in preparing fall seed beds for grain. Weeds have grown so fast during the past month that it has required considerable labor to keep them under control. Cotton has resumed growth although insects have spread so rapidly that little fruiting has occurred.

The precipitation for the first 15 days of September was 1.62 inches. The maximum temperature was 98°, the minimum, 67°. The humidity was very high.

Reports from the Panhandle of Texas indicate that there is a good supply of moisture in most localities for seeding of fall grain.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(Sept. 15) The first half of September was favorable for growth of late row crops. Broomcorn varieties planted June 14 have been harvested, and yields appear higher than expected. The early-maturing varieties of grain sorghums planted in the middle of July are heading and setting grain.

Dr. John H. Martin visited the station on September 9.

The maximum temperature for the first half of September was 97° on the 10th; the minimum 59° on the 14th. The precipitation totaled 1.37 inches in two groups of showers.

Southern Great Plains Field Station, Woodward, (Wheat Improvement, Edmund Stephens)(Sept. 15) The first seedings in the rate-and- date-of-seeding experiments with winter wheat were made today, September 15. Present moisture conditions are favorable for seeding.

It is probable that a larger acreage of wheat than usual has been seeded by now in the Southwest because of the demand for pasture.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis)(Sept. 16) The winter-wheat varietal experiment was seeded on September 8 and has emerged to good stands on both fallow and corn land. All winter wheat sown so far has sufficient moisture for prompt emergence. All fallow land has a good supply of soil moisture. The seeding of the winter-wheat nursery will be completed next week.

Proso varieties were harvested the past week. The early varieties of grain sorghum have been harvested. All the early sorghums have matured this year. Corn in this region will make about an average yield.

The third annual field crops day was held September 7. After a tour of the station in the morning an indoor program was held. A free barbecue dinner was served to 500 people. Among the visitors were Hon. Fred S. Cummings, M. C. from this district, Mr. O. O. Waggoner of the agricultural staff of the Burlington railroad, Dr. E. P. Sandsten, Director of the Colorado Agricultural Experiment Station, and the following members of the staff: Messrs. Kezer, Morten, Stewart, Robertson, Austin, Dodson, Osland, and Beach.

The maximum temperature for the first 15 days in September was 97° on the 7th; minimum, 41° on the 15th. The precipitation was 1.13 inches.

NEBRASKA

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (Sept. 15) The varietal plots at Alliance were seeded September 5 and emerged 5 days later. Nursery and field seedings at Lincoln will begin about September 20. These will be almost as extensive as last year despite the reductions in State and Federal budgets. Controlled winter hardiness studies with wheat will be expanded somewhat.

With more than 7 inches of rain at Lincoln and 4 inches at Alliance during the last 3 weeks, winter wheat should make good growth this fall. In eastern Nebraska, the menace of the Hessian fly is much less than in recent years.

Corn has matured rapidly and will yield well in this section. Sorghums may not mature.

There is a small enrollment of agricultural students this year, only 50 freshmen having registered.

Mr. A. F. Swanson of Hays, Kans., was a recent visitor at the Station.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(Sept. 16) The weather continues dry, although the temperatures have abated. The nights are reasonably cool. Rain has fallen three times so far this month, totaling 0.07 of an inch. The maximum temperature for the first half of September was 96° on the 4th; the minimum was 43° on the 2nd.

The uniform winter-wheat nursery, about 75 rows of the surviving material from the 1932-33 winter-wheat nursery, and approximately 200 head selections were sown on September 1. The soil was very dry even though the field had been in fallow during the summer. Seed will not germinate until there is 1/2 inch or more of rain. The last rain of an appreciable quantity was 0.57 of an inch on June 28.

Fall-plowed ground on the Station and on surrounding farms is lumpy and much more powdery than usual because of the extreme dryness.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)[Sept.15] The warm, dry weather that has prevailed for some time was relieved by a rain of about 1/4th of an inch last night. This was followed by cool weather that will temporarily make the grasshoppers less active. These pests are less numerous than during the summer but plentiful enough to injure any fall-sown grain.

In the following tables are shown the average acre yields obtained from cereal varieties in field plots not previously reported.

Acre yields of grain varieties in field plots at the Dickinson Substation, 1933.

Oat varieties, 4 plots each

Variety	Bu. per A.	Variety	Bu. per A.
Markton	18.2	Iogold	12.2
Rainbow	16.4	Victory	12.1
Carleton	15.6	Edkin	12.0
Anthony	15.0	Richland	11.8
Gopher	13.7	Kherson	11.7
Gr. Russian (2343)	13.4	Richland sel. 52	11.5
Wayne	12.9	Minrus	10.6
Swedish Select	12.6		

Barley varieties, 4 plots each

Horn	10.0	Hannchen	6.9
Wisconsin No. 38	8.4	Regal	6.8
Manchuria	7.6	Glabron	6.4
Lion	7.4	Svansota	6.2
Steigum	7.2	Velvet	4.8
Odessa	7.0	Composite Crosses	3.3
Trebi	6.9		

Variety	Bu. per A.	Variety	Bu. per A.
Flax varieties, 3 plots each			
Sib No. 206	3.5	C. I. No. 476	2.0
Bison	3.3	Buda	1.7
Walsh	3.1	N. D. R. 114	1.5
Linota	2.8	Golden	1.0
N. D. 40046	2.7	N. D. R. 52	0.8
Redwing	2.5		
Rio (Long-79)	2.2		
Winter wheat, 2 plots each 1/			
Beloglina	9.2	C. I. No. 8030	6.7
Yogo	8.8	Nebraska No. 60	6.4
Minturki	7.9	Kamont	5.6
Turkey	7.5	Kharkof (1442)	5.5
Kanred	7.2	C. I. No. 8034	5.2
Emmer varieties, 4 plots each			
Vernal	14.4	Yaroslav	13.4
Rye varieties, 2 plots each			
Prolific (Spring)	7.7	N. D. R. No. 9	5.4
Dakold	7.0	German	4.8
Proso, 2 plots each			
C. I. No. 217	10.4	White Ural	4.3
Red Russian	6.3	Early Fortuna	3.9
Yellow Manitoba	4.0	Turghai	3.7

Safflower in 18-inch rows yielded 156 lbs. per acre and in 6-inch rows, 91 lbs. per acre.

1/ Only one row harvested.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(Sept. 15) The first half of September passed with but a trace of precipitation. All threshing in the community was cleaned up during favorable weather. Wheat was of surprisingly good quality, although poor yields were general.

Nursery threshing is progressing and should be done by the middle of next week. Yields in the nursery are also light, only a few rows producing at the rate of 30 bushels per acre. The average yield of the 25 wheats in the uniform spring-wheat nursery was 18.4 bushels per acre. The best yielding wheats in this experiment were Marquis x Hard Federation, N. 649, Marquis x Kota 1656.106, and Kota x Webster H-209 with 23.5, 23.1, and 22.9 bushels, respectively.

The soil is too dry for sowing the uniform winter hardiness nursery.

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague)(Aug. 26) The varietal-resistance plots on acid soil in the Alsea River Valley of Oregon were harvested as they ripened in July and August. For the first time, these plots escaped injury by rodents, small birds, cattle, etc., and yield records were taken.

Gibbellina foot rot caused a loss of about 3 percent in winter wheat and winter spelt but this disease apparently was entirely absent in the spring-sown grains. There was also a small amount of injury from foot rot caused by Helminthosporium and other associated organisms in spring-sown oats and spelt. High acidity is the primary factor in reducing yields of some cereals grown on this soil. Data on the yields of a few of the varieties are given in the following table. These data were obtained from 1/300th-acre plots and are considered only general indications of yield.

Variety	C. I. no.	Yield (Lbs. per acre) Grain and Straw, Date sown: Sept. 26	March 9	March 17	April 3	Grain, Date sown: Sept. 26	March 9	March 17	April 3
Ohio T. N. 1029	--	4407	--	--	--	1005	--	--	--
Ohio T. N. 1006	--	4901	--	--	--	796	--	--	--
Golden	10063	1203	--	--	--	190	--	--	--
Fortyfold x Hybrid 128	10066	707	--	--	--	109	--	--	--
Little Club	4066	--	9	--	--	--	0.2	--	--
Holland	11389	(1)	--	--	--	--	--	--	--
Alstrown	3264	2/ 2914	2791	4114	2592	649	978	1645	802
Bearded Winter	1724	2/ 2155	3429	5020	3891	746	1031	1512	301
Red Winter	1772	2/ 3780	2828	(3)	3230	969	939	--	1146
Winter Turf	1570	(1)	9237	9577	10832	--	2036	1327	987
Markton	2053	--	--	4188	4224	--	--	1251	1520
Three Grain	1950	--	--	3841	4086	--	--	1209	1360
Victory	560	--	--	3862	4222	--	--	1142	1256
Eclipse	1564	--	4629	4297	--	--	1111	512	--
Schoolmam	2057	--	--	--	4109	--	--	--	1073

1/ Frozen out. 2/ 15 percent stand 3/ Destroyed by rodents.

Winter Turf (Gray Winter), although a winter variety, continues to be the only oat that is commercially desirable for spring seeding in this soil. The spring-sown spelts did not grow so vigorously as did the remnants of the fall-sown plants which escaped the unprecedented freeze of last December. None of the winter wheats are worthy of further trial. The reaction of Little Club is typical of spring-sown wheats.

NOTICE

Through oversight the notice of Division Reorganization, sent to all personnel, was not dated. This should be dated as of September 25, 1933, for future reference.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 25 October 10, 1933 No. 16
Personnel (Sept. 26-Oct. 10) and Field Station (Sept. 16-30)

PERSONNEL ITEMS

Dr. V. F. Tapke seeded the cooperative barley covered-smut nursery at Kearneysville, Va., on October 10.

MANUSCRIPTS SUBMITTED

49. A Rapid Method for Making Small Grain Hybrids. M. N. Pope. Sept. 28. (Note) Jour. Amer. Soc. Agron.

50. Studies of Stripe Resistance and Yield of Smooth-Awned Barley Hybrids. R. G. Shands, B. D. Leith, J. G. Dickson, and H. L. Shands. Oct. 6, 1933. Wis. Agr. Expt. Sta. Bul.

RECENT PUBLICATIONS

An Apparatus for the Convenient and Accurate Delivery of Solutions Used in Experimental Baking Tests. Philip Talbott and Ray Weaver. Cereal Chem. 10(4): 367-369, illus. July 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Grain Division of the Bureau of Agricultural Economics.)

ANNUAL REPORTS

Curtailment in the Washington clerical force, because of reduced funds, makes it necessary to change procedure in preparing annual reports. Each individual preparing a report will make provisions for having it typed at his own station or elsewhere as necessary. The sum of fifty dollars will be added to each allotment to care for the cost of this typing.

Follow the form, style, and general scope of the 1932 report. Before preparing reports read carefully the Instructions for Preparing Field Reports (revised October 1932). Read with particular care the paragraphs in section VI. Calculations. Check all data and calculations with particular care. Sections covering the different crops may be sent to project leaders for checking C. I. numbers, data, etc., before typing, but this is not required. Typed copy should be carefully proof read.

Paper and binders will be furnished from Washington. Each individual will order the amount of paper, forms, etc., needed.

There should be copies of the finished report as follows:

1 copy - Washington files.
1 copy - State station director.
1 copy - State Station agronomist.
1 copy - Local station file.
1 copy - Working use individual.

M. A. McCall.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

GEORGIA

Coastal Plain Experiment Station, Tifton (Corn Breeding, H. S. Garrison) (Oct. 7) Harvesting of the experimental corn plots was completed early in September. Notes have been taken and seed has been selected. The past season was very favorable for corn production and plenty of seed of excellent quality was obtained for future breeding and testing.

Temperatures for September were high. On all except 4 days they were above 90°. The maximum was 98° on the 19th and 20th, the minimum, 55° on the 22nd. The precipitation was 3.98 inches, mostly in the first week.

Mr. C. H. Kyle, of the Division, left here October 1 for Knoxville, Tenn. Mr. C. E. Chambliss was a visitor at the Station in September.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus)(Oct. 3) The weather continued dry during the first part of September. On Sept. 10, 0.88 of an inch of rain fell, making it possible to seed the winter-wheat nursery and field-plot experiments on Sept. 14 and 15. The wheat has emerged with good stands. At the Southeast Experiment Station, Waseca, Minn., the winter-wheat nursery and field plot experiments were sown on Sept. 7.

Winter wheat and rye are in excellent condition.

The maximum temperature for September was 94° on the 8th; minimum, 45° on the 27th. The total precipitation was 3.44 as compared with a normal of 3.13 inches.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(Sept. 30) The weather of the last half of September was dry, warm, and windy. The earlier-maturing grain sorghums have a good chance to make grain, but the kafirs and sorgos will require another month of frost-free weather to mature seed. The last plots of broomcorn will be harvested next week.

The maximum temperature for the last half of September was 101° on the 23rd; the minimum, 47° on the 20th. The precipitation was 0.10 of an inch, making a total for September of 1.47 inches.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens) (Sept. 30) The first seedings in the rate-and-date-of-seeding experiments with winter wheat, seeded September 15, emerged to good stands. The weather has been rather warm for wheat and the plants are lacking in vigor. The warm, dry weather is drying out the top soil rapidly. Farmers who have not yet seeded are anxious for rain to insure quick emergence and growth to prevent losses from blowing.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(Oct. 1) The winter-wheat nursery sown on September 1 has not emerged owing to the dry, powdery condition of the soil. At this date the kernels show no sign of germination and unless rain comes soon they perhaps will not germinate until spring.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr. (Oct. 2) Dry, windy weather prevailed during the last half of September. Only a trace of precipitation was recorded during this period. The mean temperature for September was 5° above normal.

The total precipitation for the 6 months from April to September was only 7.35 inches, which is 5-1/2 inches less than the normal for this period.

The final harvest in the after-ripening-loss experiment completed the flax harvest for the season. Yields were very low from all five harvests. The average yield of all seven varieties from triplicate rows harvested at maturity on August 4 was 2.2 bushels per acre, and from rows harvested on October 2, 2 months after maturity, 1.2 bushels.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(Sept. 30) Dry, windy weather has prevailed during the past two weeks. Only a few light showers of rain occurred.

The winter-wheat nursery was sown yesterday and field plots of winter wheat and rye were drilled today, in dry soil. Since the first of August the soil has been too dry for uniform germination of seed if sown.

A few grasshoppers are still present but their numbers have greatly decreased since August. A survey being made by State and Federal entomologists indicates that while grasshopper eggs are very plentiful, they are not quite so numerous in this locality as they were last fall.

The corn varieties were husked last week and very light weights of corn and stover were recorded.

Plant rows from the smut nursery are being threshed, and promising hybrids, judged by their behavior at this and other stations, are being saved for the 1934 nursery.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (Sept. 30) The uniform winter-hardiness nursery was sown September 27 in slightly moist soil. It has not yet emerged and will need additional moisture to become well established.

The precipitation for September was considerably below normal for that month but was more than for any of the summer months. The weather was unusually windy and unsettled during the last half of the month. Because of the early harvest, fall plowing is well along in this section, and considering the extreme dryness of the soil, a good job is generally observed.

Field work and threshing for the season have been completed for the cereal project and at present grain is being cleaned, hybrids are being worked over, and samples are being prepared for shipping.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (Oct. 2) The winter-wheat varietal plots and nursery were sown during the week of September 4 to 9 when the soil was in good condition. Perfect stands have been secured.

A large acreage in central Montana has been seeded to winter wheat this fall with varying degrees of success. Wheat seeded on good fallow has grown rapidly enough to escape serious injury from grasshoppers, while that sown on stubble is in poor condition as the result of drought and grasshoppers.

The maximum temperature for September was 86° on the 4th; minimum, 22° on the 30th. There was a precipitation of 0.57 of an inch.

The average yields and spring survivals of winter-wheat varieties grown in four 1/50th-acre plots are given in the following table.

Variety	C.I. no.	Spring stand (Percent)	Yield (Bu. per acre)
Minhardi x Minturki	8215	45	9.4
Minard x Minhardi	8888	28	9.3
Minhardi x Minturki	8034	32	8.7
Kanred x Minhardi	8040	28	8.3
Do.	8042	32	8.3
Turkey x Minessa	8887	23	8.2
Eureka x Minhardi	8036	27	8.1
Minard x Minhardi	8889	30	8.1
Yogo	8033	28	7.7
Minard x Minhardi	8218	35	7.7
Nebraska No. 60	6250	27	7.2
Kharkof	1442	13	6.5
Minturki	6155	17	6.1
Kanred x Minessa	8045	17	5.2
Turkey x Minessa	11505	13	4.8
Turkey	1558	7	4.3
Newturk	6935	10	4.3
Oro	8220	10	4.3
Kanred	5146	5	4.2
Karmont	6700	3	3.3

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin) (Oct. 2) There was a total precipitation of 1.20 inches in September, the greater part of it being recorded the latter half of the month. Much of the surface moisture has evaporated but probably enough moisture remains in the soil to start weeds. If this is true, seeding operations will have begun by October 15.

The temperatures in September were cool and frost occurred on several nights. The minimum temperature was 27°.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward)(Oct. 2) Generally dry conditions continue over most of Utah, although 0.84 of an inch of rain fell in four showers. The mean temperature for September was 60°. Most of the winter wheat has yet to be seeded; farmers hesitate to sow when there is so little moisture in the soil.

Seeding of the winter-wheat nursery at Newton, Utah, was completed September 30. All the smut material will be sown at Logan in October.

The corn varieties at Logan have matured nicely and promise very good yields. In general, grain sorghums have done well, only 6 of 21 varieties failing to mature completely. A minimum temperature of 30° on September 16 did no appreciable damage, but a minimum of 28° on October 1 froze most of the leaves on both the corn and sorghums

Flax yields throughout the State were lower this year than during the past two years. The same was true of oats, there being about a 20-bushel reduction in the average county yields. Corn and grain sorghums will be harvested in the next few days and this will complete the harvest for this season.

NOV 13 1933

CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
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Vol. 25 October 25, 1933 No. 17
Personnel (Oct. 11-25) and Field Station (Oct. 1-15)

MANUSCRIPTS SUBMITTED

51. Wheat Leaf Rust is an Important Factor in Reducing the Bread-making Quality of Wheat. R. M. Caldwell. Sept. 30. U. S. Dept. Agr. Yearbook 1934.

52. The Corn-Disease Problem in Relation to Quality in Corn, and the Prospects for Disease-Resistant Strains. J. R. Holbert. Sept. 30, U. S. Dept. Agr. Yearbook 1934.

53. A Mechanical Method for the Determination of Absorption in Bread Doughs. C. C. Fifield. Oct. 19, Cereal Chemistry.

54. The Relative Importance of Cercosporella herpotrichoides Fron and of Leptosphaeria herpotrichoides De Not as Parasites of Winter Cereals. Roderick Sprague. Oct. 19. Phytopathology.

55. Horace Mann Woolman. H. B. Humphrey. Oct. 20. Phytopathology.

RECENT PUBLICATIONS

Portable Refrigeration Chambers for Studying Cold Resistance of Plants in the Field. J. R. Holbert, W. L. Burlison, and A. G. Johnson. U. S. Dept. Agr. Circ. 285, 28 p., figs. 1-23. September 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Illinois Agricultural Experiment Station and the Funk Bros. Seed Co.)

Inheritance of Stem-Rust Reaction and Correlation of Characters in Pentad, Kodak, and Akrona Durum-Wheat Crosses. Glenn S. Smith and J. Allen Clark. U. S. Dept. Agr. Tech. Bul. 385, 28 p., figs. 1-2. October 1933. (The wheat-improvement work at the Langdon substation, Langdon, N. Dak., is carried on cooperatively by the Division of Cereal Crops and Diseases and the North Dakota Agricultural Experiment Station.)

Comparisons of Hybrids with Native Strains of Corn for Disease Resistance and Yielding Ability. John F. Trost. In Ind. Corn Growers' Assoc. Rpt. 1933: 24-28. 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Purdue University Agricultural Experiment Station.)

Oat Varieties Highly Resistant to Crown Rust and Their Probable Agronomic Value. T. R. Stanton and H. C. Murphy. Jour. Amer. Soc. Agron. 25(10): 674-683. October 1933. (Cooperation between the Division of Cereal Crops and Diseases and the Iowa Agricultural Experiment Station.)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

OHIO

Agricultural Experiment Station, Wooster (Corn Investigations, G. H. Stringfield) (Oct. 14) The corn harvest at Wooster is finished and at most outlying stations is well under way. Much of the State has gone through another "unusual" season. A very wet spring was followed by a prolonged drought during June and July. Considerable lodging accompanied early August rains. The result, however, has been favorable for corn breeding through the selective influence of the adverse seasonal conditions.

About 30 of the 35 farmer cooperators who are producing double-crossed seed from single crosses provided them from the corn project, have carried their material through to harvest and will continue next year in making a quantitative comparison of the double cross with their own corn and in conducting another crossing block. The writer wishes to express appreciation for the material supplied by other members of the Corn Project for use in their farmer plots.

Mr. Richey was a recent visitor from the Washington office. During his stay he inspected corn work at Columbus and Wooster and at a number of outlying points. He addressed members of the staff at Wooster on the subject of corn investigations in the United States.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)[Oct.5]
Field work was delayed somewhat by rain the first part of September. All seed beds were prepared for fall seeding by the end of the month. All seed for the nursery has been prepared. The winter-wheat nursery at Amarillo was seeded September 28 to 30. A gentle rain of 0.48 of an inch on the following night should provide moisture for germination. Very little reserve moisture is available, however. A replicated varietal experiment in field plots was sown at Amarillo October 2. Three cooperative varietal tests consisting of 10 varieties each were seeded in the Panhandle in Deaf Smith, Hansford, and Hale Counties. Although conditions for seeding were very favorable in Hale County, the greater part of the Panhandle of Texas is in need of rain in spite of the 6-inch rain in August.

Messrs. J. H. Martin and O. R. Mathews were visitors at the Substation September 11.

(Oct. 15)

The weather of the first half of October was dry and the temperatures were above normal. This was unfavorable for seeding small grain, although in the community some had been sown in dry soil. The maximum temperature was 89°, the minimum, 41°. The precipitation, starting on the afternoon of the 12th, totaled 1.26 inches for the first half of the month. This will provide ample moisture for seeding.

Seeding of the wheat nursery was started October 11 and quite a number of miscellaneous seedings and head rows were sown before the rain on the 12th.

The weather for the past month has been favorable for cotton picking and most of the cotton in the community has been picked.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy)[Boyd Faulkner] [Oct. 18]

Average yields of 17 oat varieties grown in quadruplicated 1/40th-acre plots at the North Platte Substation, 1933

Variety	C. I. no.	Yield(bu.per A.)
Burt	293	30.9
North Platte No. 10	--	29.4
Trojan	2491	29.1
Gopher	2027	29.1
Brunker	2054	28.4
Fulghum H.C.No. 726 1/	--	27.8
Carleton	2378	27.5
Markton	2053	27.2
Markton x Sixty-Day	2379	26.9
Fulghum	708	26.3
Iogold	2329	25.9
Iowar 2/	847	25.8
Nebraska No. 21	841	25.6
Early Red Rustproof	2823	25.3
Kherson	459	25.0
North Platte No. 7	--	24.4
Columbia	2820	23.1

1/ Hays Cereal number 2/ Check

NORTH DAKOTA

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(Oct. 14) Mild, dry weather has prevailed during the first half of October. No precipitation was recorded. The lowest temperature was 19° one morning this week.

The ground is too dry for effective work in plowing and practically no fall plowing is being done in this section. Plowing at the Substation is limited to certain rotation plots that are plowed each fall. This plowed land is very dry and cloddy.

Field work at the Substation is nearly completed and yields are being computed.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland)[Oct. 18]

Average yields of 10 oat varieties grown in quadruplicated 1/50th-acre plots at the Judith Basin Branch Station, Moccasin, Mont., 1933.

Variety	C. I. no.	Yield (bu. per A.)
Iogold	2329	27.8
Markton	2053	27.0
Carleton	2378	26.6
Selection	357-169	25.9
Do.	357-168	25.8
Do.	357-185	25.2
Do.	357-112	23.1
Sixty-Day	165	22.7
Swedish Select	134	13.3
Idamine	1834	9.8

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines) (C. A. Vogel) (Oct. 17) The varietal material of all nurseries was seeded in the first week of October. These nurseries are located at Walla Walla, Pomeroy, LaCrosse, and Pullman. Moisture conditions were ideal for the Walla Walla and Pullman nurseries but not so satisfactory for the Pomeroy and La Crosse nurseries, in which only a small percentage of the grain in each row has germinated.

After a rainfall of approximately an inch in the latter part of September farmers in the Palouse area began seeding operations, and the wheat sown early in October is now two to three inches high. The fields have a moderately uniform growth, which was not the case during the two previous years because of lack of moisture on the hilltops and on southern slopes.

In the Big Bend area the summer-fallow fields are too dry to insure germination from fall seeding. Most of the farmers of that area are planning to wait until next spring if sufficient rain does not fall soon.

NOV 21 1933

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

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Vol. 25 November 10, 1933 No. 18
Personnel (Oct.26-Nov.10) and Field Station (Oct. 16-31)

PERSONNEL ITEMS

Dr. J. H. Martin spent the week from October 29 to November 4 at Cincinnati, Ohio, as a witness in a case involving the misbranding of sorghum seeds sold in interstate commerce. The defendant was being prosecuted by the United States Department of Agriculture for violating the misbranding section of the Federal Seed Act.

Attendance at the meetings of the American Society of Agronomy to be held in Chicago November 16 and 17 has been authorized for the following: E. R. Ausemus, A. M. Brunson, A. A. Bryan, R. M. Caldwell, J. G. Dickson, H. Fellows, J. R. Holbert, P. E. Hoppe, M. T. Jenkins, C. O. Johnston, M. A. McCall, V. H. Morris, H. C. Murphy, J. H. Parker, F. D. Richey, R. R. St. John, S. C. Salmon, J. D. Sayre, R. G. Shands, G. M. Smith, G. S. Smith, R. W. Smith, L. J. Stadler, G. S. Stringfield, C. A. Suneson, A. F. Swanson, and J. F. Trost. As heretofore, expenses for the trip are not paid, the authorization covering merely payment of salaries and making use of annual leave unnecessary.

Dr. M. T. Jenkins has been chairman of the Crops Section of the Society during the past year and has made arrangements for the crops program. Dr. A. M. Brunson, Dr. A. A. Bryan, Dr. R. M. Caldwell, Dr. S. C. Salmon, and Mr. R. R. St. John are to appear on the program. Dr. McCall is scheduled to give the address of the retiring president at the Society banquet program.

Messrs. McCall, Richey, and Salmon are also authorized to attend the meetings of the Land Grant College Association for the purpose of conferring with cooperators on mutual administrative problems.

Prior to the meetings Messrs. McCall and Salmon are visiting cooperating stations in Kansas, Nebraska, Iowa, Minnesota, and Wisconsin in the interests of future plans, etc. After the meetings Messrs. McCall and Richey plan similar stops in Illinois and Indiana.

NOTICE

The meetings of the American Association for the Advancement of Science will be held this year at Boston, Mass., December 26 to 30.

It is not known what the policy of the Department will be in regard to attendance, but for the past several years the Secretary of Agriculture has approved attendance by members of the staff at their own expense other than salary, in addition to one or two Bureau representatives.

Members of the Division of Cereal Crops and Diseases who may wish to attend the meetings in Boston should communicate at the earliest possible date with the Principal Agronomist in Charge so that he may present recommendations to the Chief of the Bureau of Plant Industry.

MANUSCRIPTS SUBMITTED

56. On the Genetic Nature of Induced Mutations in Plants II. A Haplo-Viable Deficiency in Maize. L. J. Stadler. Oct. 30. Missouri Agr. Expt. Sta. Research Bul.

RECENT PUBLICATIONS

Sorghum Production in Kansas. H. H. Laude and A. F. Swanson, Kans. Agr. Expt. Sta. Bul. 265, 47 p., illus. July 1933. (Cooperative investigations of the Kansas Agr. Expt. Sta. and the Division of Cereal Crops and Diseases.)

Control of Stem Rot of Rice by Burning Stubble. E. C. Tullis, J. B. Wood, and Deane G. Carter. Agr. Engin. 14(8): 218-219, fig. 1. August 1933. (Cooperation between the Arkansas Agr. Expt. Sta. and the Division of Cereal Crops and Diseases.)

Pollen Tube Establishment and the Deficiency of Waxy Seeds in Certain Maize Crosses. G. F. Sprague. Natl. Acad. Sci. 19(9): 838-841, figs. 1-2. September 1933.

Chromosome Numbers in Flax (Linum). A. C. Dillman. Science n. s. 78(2027): 409. Nov. 3, 1933.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(Oct. 31) The precipitation in October was 1.26 inches; the maximum temperature was 89°, the minimum, 41°. Temperatures for the month were 2.6° above normal, while the precipitation was 2.31 inches below normal. There was no rainfall in the last half of the month.

Owing to the deficient rainfall so far this fall the emergence of much of the small grain has been retarded. Seeding of the winter-wheat nursery was started on October 12 but was stopped the following day by a rain of 0.93 of an inch. All seedings made before the rain emerged in record time on the 17th. Seeding was resumed on the 18th and all fall seedings were completed as quickly as possible. The ground dried rapidly after the rain and some of the seedings made with a wheel hoe, such as barley and oats, have not yet emerged to good stands. All field plot varietal tests emerged to good stands.

Word has been received that the nursery and other seedings at the Price Memorial College have emerged to good stands and so far have survived the drought. Newspaper reports indicate, however, that wheat in the Panhandle of Texas is in very poor condition owing to the lack of moisture.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(Oct. 16) There were some cool nights in the first half of October and a killing frost was missed by only one or two degrees.

The broomcorn plots are harvested. The yields will be higher than expected. The quality of the brush is low, as it "runs to stemmy." The grain sorghums are ready to harvest; the yields will be low.

The minimum temperature for the first half of October was 33° on the 9th, the maximum 88° on the 10th. The precipitation totaled 0.86 of an inch. (Nov. 1)

The weather of the last half of October was mild and dry. So far there has not been a killing frost and many late-planted sorghum fields will mature grain.

Yields of row crops in this district will vary more than usual because of the more or less local rains during the spring and summer.

The minimum temperature for the last half of October was 33° on the 20th; the maximum 81° on the 25th. There was no rain in this period.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(Oct. 16) There was just enough rain in the first half of October to put the ground in good shape for the emergence of winter wheat. The winter-wheat varietal plots were seeded on October 13 and 14. Nursery seeding, which has been in progress since the first of the month, will be nearly completed during the coming week. Much of the winter-wheat nursery

has emerged to good stands. Conditions now are good for the growth of winter wheat, but more rain is needed to insure optimum growth conditions up to the advent of cold weather. (Nov. 1)

The winter-wheat varietal plots and nursery are up to good stands, and are making satisfactory growth. The fourth seeding of five in the rate-and-date-of-seeding experiments with winter wheat was made today. Previous rate-and-date seedings have made good growth. Leaf-rust infection, which was very light last spring, has appeared in early-sown plots. The precipitation in October, like that in September, was considerably below normal, and winter wheat in this region is in need of moisture.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(Nov.1) The soil has been too dry to freeze solid as yet. Some fall plowing was done on the station and on surrounding farms during the last week in October.

The winter-wheat nursery sown on September 1 has not emerged to date, although there is now sufficient moisture for germination of seed - if the soil is raised to a suitable temperature.

Freezing temperatures were recorded for 18 days in October. The minimum temperature was 16° on October 11; the maximum, 78° on October 13. The precipitation totaled 0.55 of an inch.

Dickinson Substation, Dickinson (Cereal Agronomy, E. W. Smith)(Oct.31) Cool, cloudy weather has prevailed during the latter half of October. There were several light showers, and a snowfall of about 3 inches on the 27th. The total precipitation for the month was 0.55 of an inch, which is slightly below the normal for October. Winter wheat sown in dry soil in September was not moistened until the rain of 0.33 of an inch on October 15. Germination began but was suspended by freezing temperatures. The ground is now free from frost and snow and a few more warm days would result in the emergence of the grain.

Practically no fall plowing has been done in this district, owing to the dry condition of the soil.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(Oct. 31) Early in October the uniform winter hardiness nursery emerged with fairly uniform stands, but temperatures and moisture since then have not been favorable to prolific growth. About four inches of snow have fallen during the month, but none remains after the past two days of thawing weather.

Although the ground was extremely dry, fully as much fall plowing as usual was done in this section.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland)(Nov. 1) Only 0.60 of an inch of rain was recorded in October. This came in a number of small showers and snowfalls and was of little benefit. A large acreage of wheat seeded in stubble this fall has not emerged because of the lack of soil moisture, whereas the greater part of the winter wheat seeded on fallow land is in good condition.

The maximum temperature was 81° on the 4th, the minimum, 14° on the 21st.

The average yields and test weight of the grain of spring-wheat varieties grown in four 1/50th-acre plots in 1933 are given in the following table:

Average yield and test weight of spring-wheat varieties grown at the Judith Basin Branch Station, Moccasin, Mont., in 1933

Variety	C.I.no.	Yield (Bu.per acre)	Test weight (Lbs.)
Hard Red Spring			
Marquis x Hard Fed. NN 649	11464	16.3	58.0
Marquis x Hard Fed. NN 666	11467	15.0	55.0
Double Cross	10003	14.8	55.0
Kota x Marquis	10014	14.6	58.0
Supreme	8026	14.1	58.0
Ceres	6900	14.1	58.5
Reliance	7370	13.6	56.0
Reward	8182	13.6	61.0
Marquis x Hard Fed. NN 657	11466	13.2	53.5
Marquis	3641	12.3	57.0
Reliance x Hope NN 1110	11433	12.1	57.0
Hope x Reliance NN 1121	11434	11.9	55.0
Marquillo	6887	11.7	54.0
Hope	8178	11.2	52.5
Hope x Reliance NN 1128	11431	10.8	55.0
Power	3697	10.3	59.0
Durum			
Poliss sel. 14	10001	13.2	58.5
Kubanka	1440	12.3	60.0
Mindum	5296	11.1	60.0
White			
Baart	1697	18.2	60.0
Federation	4734	14.2	53.0

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin) (Nov. 1) Seeding of the cereal nursery and field plot varietal experiments was begun on October 20. It was necessary to sow in the dust. However, the precipitation on the last five days of October totaled 1.18 inches, so the plants should emerge in good shape.

The cereal nursery experiments were expanded this year by the addition of some valuable hybrid material. Approximately 75 hybrids in the F_1, F_2, or F_3 generation are included. All grain is now sown with the exception of a few odds and ends.

The total rainfall for October was 1.23 inches. The minimum temperature was 23°, the maximum, 85°. The weather during the day was fairly warm, but the nights were usually cool.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R .W. Woodward) (Nov. 1) The weather in October was warm and clear, with a mean monthly temperature of 51° as compared with 44° for October 1932. The season has been unusually dry. The total precipitation from May 22 to October 31 was 1.4 inches. Considerable winter wheat has been seeded but remains in the dry soil as yet unable to germinate.

All of the fall harvest on the station has been completed and most of the yields calculated. The grain sorghums were harvested, dried, and threshed in the nursery thresher. Yields from the four replications as computed from room dry seed is as follows:

Variety	Total green silage (Tons)	Grain yield (Bu.per A.)
Red Amber	14.6	95.8
Sooner milo	12.3	87.7
Dakota Amber	11.2	84.2
Dwarf Hegari	13.3	82.9
Modoc	14.1	75.1
Early Straightneck milo	9.8	74.7
Black Amber	16.9	74.0
Weskan	14.7	72.2
Greeley (Tribune no.12)	8.1	67.7
Wheatland milo	8.6	62.3
Pygmy (Two-foot)milo	7.3	60.1
Dwarf Freed	11.2	57.7
Feterita	10.4	57.5
Freed	12.8	57.2
Kalo	12.1	53.6
Wheatland Backcross	7.7	48.8
Dwarf Yellow milo	17.1	39.0
Early Kalo	7.5	35.5
Dwarf White durra	6.1	21.7

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. E. Bartel) (Nov. 4) The mean maximum temperature for October was 88.1, the mean minimum temperature, 55.8. The precipitation was 1.92 inches, which is an inch above normal for October.

The regular nursery varieties have not yet been sown. The first seeding in the date-of-seeding test is well up and in excellent condition.

The yields of the grain-sorghum varieties grown at Sacaton are as follows:

Variety	C. I. no.	Yield (Bu.per A.)
Fargo Straightneck	809	61.7
Double Dwarf milo	868	56.7
Dwarf Hegari	682	45.0
Beaver milo	871	44.5
Pierce kafir	-	40.1
Orchoma	920	37.3
Wheatland milo	918	35.6
Dwarf Yellow milo	332	20.6

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C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture

(NOT FOR PUBLICATION)

Vol. 25 November 25, 1933 No. 19
Personnel (Nov.11-25) and Field Station (Nov. 1-15)

PERSONNEL ITEMS

Dr. M. A. McCall returned on November 22 from a field trip covering Kansas, Nebraska, Iowa, Minnesota, Wisconsin, Illinois, and Indiana. He also attended the meetings of the Association of Land-Grant Colleges and Experiment Stations November 13 to 15 and the American Society of Agronomy November 16 and 17. The primary purpose of the trip was to discuss problems arising from Division reorganization and to develop plans for future cooperative undertakings. One striking fact in evidence in every State is the general optimism and the high degree of efficiency with which research is being advanced. The spirit of cooperation is everywhere evident. All these factors also were reflected in the meetings both of the Land-Grant Association and the Society of Agronomy. The latter was one of the best, if not the best, both in interest and quality of papers, ever held by the Society. The planning and management of the program for the Crops Section was under the chairmanship of Dr. M. T. Jenkins, of this Division.

AMERICAN SOCIETY OF AGRONOMY

Officers 1933-34

President: Prof. R. I. Throckmorton, Kansas State College of Agriculture and Applied Science, Manhattan, Kans.
Vice President: Dr. H. K. Hayes, University Farm, St. Paul, Minn.
Chairman, Crops Section: Mr. H. L. Westover, Division of Forage Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.
Chairman, Soils Section: Prof. C. F. Shaw, University of California, Berkeley, Calif.
Secretary-Treasurer: Dr. P. E. Brown, Iowa State College, Ames, Iowa.
Editor: Prof. J. D. Luckett, Agricultural Experiment Station, Geneva, N. Y.

The following were elected as Fellows of the American Society of Agronomy at the meetings held in Chicago, Ill., November 1933:
Dr. R. J. Garber, University of West Virginia, Morgantown, West Va.
Prof. R. I. Throckmorton, Kansas State College of Agriculture and Applied Science, Manhattan, Kans.
Prof. A. R. Whitson, University of Wisconsin, Madison, Wis.

Mr. Knowles A. Ryerson, in charge of the Division of Foreign Plant Introduction, Bureau of Plant Industry, has been appointed Chief and Mr. F. D. Richey, in charge of corn research in our own Division, has been appointed Associate Chief of the Bureau of Plant Industry, effective January 1, 1934.

Mr. Ryerson will succeed Dr. Wm. A. Taylor, who retires after 42 years' service in the Department of Agriculture, 20 of which have been as head of the Bureau of Plant Industry. Mr. Richey succeeds Dr. K. F. Kellerman, who becomes head of the new Division of Plant Disease Eradication and Control in the Bureau of Entomology and Plant Quarantine.

Mr. Ryerson was graduated from the University of California in 1916 and he received his M. S. degree from the same university in 1924. He was with the agricultural extension service of the University of California from 1919 to 1925. For the next two years he was in Haiti as horticulturist on the staff of the Agricultural Experiment Station. After serving seven months in 1927 as horticulturist with the Joint Palestine Survey Commission in Palestine and Transjordania he became head of the Division of Foreign Plant Introduction in the Bureau of Plant Industry.

Mr. Ryerson's interest in and appreciation of scientific research are definite and active. His service in the Division of Foreign Plant Introduction, which has included foreign exploration, has given him a very broad contact with and interest in plant problems. His familiarity with conditions in different parts of the world will be most helpful in his new position.

Mr. Richey was graduated from the University of Missouri in 1909. He was in charge of a large farm in Illinois for one year after graduation, and during the year 1910-11 was in the service of the Missouri State Department of Agriculture. He entered the U. S. Department of Agriculture in the then Office of Corn Investigations in 1911. He was placed in charge of the corn project of the Division of Cereal Crops and Diseases in 1922. In this latter position he has established a reputation for high grade research in corn breeding, genetics, and statistical methods and has organized a most effective corn-breeding program entirely cooperative with the State experiment stations in the corn-producing areas. Mr. Richey's appointment is a matter of great gratification to the Division and insures first-hand practical knowledge in the consideration of our administrative problems.

M. A. M.

MANUSCRIPTS SUBMITTED

57. Inheritance of Awn Development in Sorghums. J. B. Sieglinger, A. F. Swanson, and J. H. Martin. Nov. 14. Jour. Heredity.

58. Ascochyta hortensis on Beans in Oregon. Roderick Sprague. Nov. 14. Phytopathology.

59. The Root-Knot Nematode on Rice. E. C. Tullis. Nov. 14. Phytopathology.

RECENT PUBLICATIONS

A Dwarf Mutation in Kafir. John B. Sieglinger. Jour. Heredity 24(9): 337-338, fig. 2. September 1933.

A Rapid Method for Making Small Grain Hybrids. Merritt N. Pope. (Note) Jour. Amer. Soc. Agron. 25(11): 771-772. November 1933.

Varieties of Club Wheat. J. Allen Clark and B. B. Bayles. U. S. Dept. Agr. Farmers' Bul. 1708, 12 pp., 6 figs. October 1933.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (Nov. 14) The weather in October was ideal for farm operations. The total precipitation was only 1.92 inches, of which over an inch fell on one day. The total precipitation for October 1932 was 5.45. The maximum temperature was 88°, the minimum, 41°.

Work on the Station progressed satisfactorily. Harvesting was kept up to date, and much was accomplished in the way of leveling fields preparatory to replotting.

Because of the favorable weather nearly all commercial rice fields had been threshed by the end of October. The indications are that both the field yields and the quality of the rice will be better than those of last year. This is especially true of the midseason and late-maturing varieties.

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(Nov. 16) The weather of the first half of November has been about normal, although there has been less rain than usual. The maximum temperature was 84° on the 14th. The minimum of 30° on the 8th was the first killing frost of the season. No damage was done, as all crops were mature and there were but few garden plantings this fall owing to the dry weather. The precipitation totaled 0.54 of an inch on Nov. 3.

All small grain has made good growth and became well established. Seedings in field plots are all up to good stands. Oats in the nursery are just emerging following the rain on the 3rd. The uniform smut nursery, as well as other smut nursery seedings, were made the morning of the 16th.

Although no reports have been received from cooperators in the Panhandle, it is believed that wheat there is now in better condition. From November 3 to 5 general rains were reported throughout that section, including 0.52 of an inch at Amarillo, more than 2 inches at Spearman, and about 0.75 of an inch at Plainview.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr. (Nov. 16) Snow falling in the period from November 2 to 5 caused a break in the drought that has prevailed since March. The total precipitation for the four days was 0.78 of an inch, which is about 50 percent more than the average for the entire month of November. The ground was covered to a depth of 6 inches. Most of the snow has melted during the past few days. The moisture was absorbed immediately by the unfrozen groundwith little preceptible run-off. A severe wind the morning of Nov.12 caused some damage. Two airplanes at the local airport were torn from their moorings and windmills, chimneys, and sheds were also blown down. The snow protected the fields from severe soil blowing. Temperatures were low for this time of year, the maximum being 52° on the 13th, and the minimum, 6° on the 8th.

Yield and wilt data in the uniform flax nursery are as follows: Acre yield and percentage of wilt of 15 varieties of flax grown in 3-row plots of 17-foot rows in triplicate, arranged in rank of average yield (3 center rows) at Mandan, N. Dak., in 1933.

Variety	C. I. no.	Wilt (P.ct.)	Yield (Bu.per A.)
Bison	389	23	4.9
Linota	244	20	4.7
Rio	280	63	4.5
Buda	326	15	4.0
Pale Blue	387-1	47	4.0
B. Golden	644	41	3.8
Redwing	320	25	3.7
Ottawa 770 B	355-8	63	3.7
L. Golden	735	71	3.7
Hyb. (19 x 112) x 19	743	13	3.4
Long Sib x E	697	44	3.4
Minn.Sel.Arg. x Saginaw	656	38	2.2
Minn.Sel.Sag. x Ott. 770 B	675	52	2.2
Minn.Sel.Sag. x Ott. 770 B	684	65	2.1
Arg. Pale Verbena	416-3	44	1.7

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)(Nov.15) A snowfall 6 to 8 inches in depth on November 3 gave a wintry aspect to this region for most of the month. Warm, windy weather beginning the 11th has caused the snow to disappear. The resulting moisture, totaling about 0.5 of an inch, will aid the fall-sown grain to germinate and become established. A continuance of the present mild weather should soon cause emergence of winter wheat and rye which began to germinate before the snowstorm.

WASHINGTON

Agricultural Experiment Station, Pullman (Wheat Improvement, O. A. Vogel)(Nov. 6) The warm dry weather during the first two weeks of October was followed by a period of rainfall lasting until November 4 which resulted in a total precipitation of 5.05 inches. The surface soil to the plow depth had been over saturated and as a result some slipping and considerable erosion took place, especially in the fields sown just before the rains. Some of these fields appear as badly eroded as a number of fields did last spring. In one field of fall-seeded wheat an area covering nearly one half an acre has already slid down a steep hill. It will be of interest next spring to compare the later-seeded fields with the considerably less eroded ones that were seeded during or before the late September rains and which now have a stand of wheat almost entirely in the 3-leaf stage. The majority of the fall-sown fields are now in the 2-leaf stage. With continued growing weather these fields should make growth sufficient to check further erosion. During the two previous years the fall-sown grain of this area had just barely germinated before winter set in and consequently could not check the serious erosion.

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens) (Nov. 16) Unfavorable weather for seeding winter wheat prevailed in the Columbia River Basin of Oregon until late in October. During September there were several small showers that totaled 0.87 of an inch for the month, but not enough moisture fell at any one time to do any good. During the last week in October 1.28 inches of rain fell at Moro. This was followed by 0.45 of an inch on November 2 and 3. The total precipitation for October was 1.40 and for the first half of November 0.62 of an inch.

Winter wheat, most of which was seeded in October in dry ground, has germinated since the rain but at least 10 days more of moderate weather will be needed before it will emerge. Weeds, too, have germinated and emerged but there has been no chance yet to kill them by cultivation because of the wet surface soil.

The maximum temperature for October was 82° on the 7th; minimum, 25° on the 21st. The maximum temperature for the first half of November was 65° on the 2d and the minimum 27° on the 6th.

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague) (Nov.8) The final seeding in the Cercosporella varietal resistance plot on High Prairie was made on September 25. The soil was saturated with moisture and emergence was prompt.

The acid soil footrot plot in the Alsea Valley, Oreg., was seeded October 4 and 5 and was composed mainly of winter spelts and winter oats. A rain gauge set up near this plot on Sept. 11 recorded 6.63 inches of rain in October, most of which fell in the last half of the month. The precipitation at Corvallis, in October was 2.67 inches; at High Prairie 2.69 inches; and at Tygh Ridge, 0.8 of an inch.

Dr. C. S. Holton was at Corvallis early this month to seed fall wheat in the smut nursery.

C E R E A L C O U R I E R

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Personnel (Nov.26-Dec.10) and Field Station (Nov.16-30)

RECD
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PLANT INDUSTRY

PERSONNEL ITEMS

Dr. Merle T. Jenkins came to Washington on December 6 to confer with members of the Division regarding cooperative corn experiments. He will be in Washington for perhaps two weeks.

MANUSCRIPTS SUBMITTED

60. Development of Oats Resistant to the Smuts and Rusts. T. R. Stanton, H. C. Murphy, F. A. Coffman, and H. B. Humphrey. December 4. (Note) Phytopathology.

61. Linkage Relations of the A_2 a_2 Factor Pair in Maize. Merle T. Jenkins. December 6. American Naturalist.

RECENT PUBLICATIONS

Varieties of Durum Wheat. J. Allen Clark. U. S. Dept. Agr. Farmers' Bul. 1706, 13 pp., 6 figs. October 1933.

Varieties of Common White Wheat. J. Allen Clark and B. B. Bayles. U. S. Dept. Agr. Farmers' Bul. 1707, 22 pp., 11 figs. October 1933.

Wheat Smuts and Their Control. J. A. Faris, V. F. Tapke, and H. A. Rodenhiser. U. S. Dept. Agr. Farmers' Bul. 1711, 17 pp., 10 figs. October 1933.

The Spermatia of Corn Rust, Puccinia sorghi. Ruth F. Allen. (Phytopathological Note) Phytopathology 23(11): 923-925, fig. 1. November 1933. (Cooperation between the California Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

Corn Culture. Frederick D. Richey. U. S. Dept. Agr. Farmers' Bul. 1714, 26 pp., 16 figs. November 1933.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

TEXAS

Substation No. 6, Denton (Wheat Improvement, T. M. Atkins)(Nov. 30) The temperatures during the last half of the month were very high. The mean temperature for the month was 57.2°, or 2.7° above normal. The precipitation for the month was 0.59 of an inch on the 3rd.

After this rain most grain which had not emerged was able to germinate. In some small sections of the nursery full stands have not yet emerged. All grain has made satisfactory growth during the month but is now needing rain. Cold or cooler weather would also be desirable to harden the grain in preparation for winter. A small amount of leaf rust appeared in the nursery during the warm weather this month.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(Dec. 1) The temperatures in November were mild, but lack of moisture prevented optimum growth conditions for winter wheat. The wheat, particularly that sown before Oct. 1, is showing effects of drought. However, in the well-prepared ground on the Station there is enough moisture for emergence. Rate and date seedings made Nov. 15 are up to good stands.

The maximum temperature in November was 80° on the 1st; the minimum, 28° on the 16th. The precipitation for November totaled 0.52 of an inch, which fell in small showers during the first six days of the month. The precipitation for the three months September, October, and November has been 46 percent of normal.

NEBRASKA

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson)(Dec. 1) The first good rain since seeding time was recorded today. There has been no effective precipitation at Alliance and only 0.24 of an inch at Lincoln in October and November. In some fields there has been a little soil blowing, and in the early seeding dates some drought injury has been observed. However, growth has been normal or slightly in excess. The temperatures also have been normal.

The hardiness relations of field-grown winter wheats during the last week in November, as compared with those of other years, are of interest. Effective minimum freezing temperatures employed in control freezing studies in the years 1930-33 were -6°, +3°, -3°, and -8° F., respectively, for this period. The great hardiness this year has been developed under comparatively high mean temperatures, the minimum for the period being +17° F. on November 12. Data at hand also show that the plants are higher in moisture content than in past years.

The controlled freezing program in general appears to be yielding more scientific "pay dirt" each year. At least 30,000 plants will be used in these experiments this year.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(Dec. 1) Weather conditions in November were slightly above normal. The maximum temperature was 39°, the minimum, 21°. Nine and one-quarter inches of snow fell during the month. The total precipitation was 0.90 of an inch, nearly twice the normal for November.

Dry weather and lack of soil moisture prevented the emergence of plants in the winter-wheat nursery. Some of the seed is germinated, however, and probably will develop normally in 1934.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)(Nov. 29) The weather in November has been moderate. Snows have been frequent but not heavy and three warm periods have left very little snow on the level.

Tabulation of data and study of hybrids have been made this month.

Macaroni samples made from the 1933 durum varieties have been received from the Washburn-Crosby Co., and the ranking of varieties for quality compares closely with that for previous years.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (Dec. 1) The precipitation for November was far below average, being received in two light snow storms. Drought has prevailed since the heavy rains of the latter part of August. There were high winds on several days in the week of November 19 to 25 and soil blowing was quite general.

The precipitation was 0.39 of an inch. The maximum temperature of 66° was recorded on the 13th, 18th, and 19th; the minimum was -2° on the 28th.

The average yields of 11 barley varieties grown in four 1/50th-acre plots at the Judith Basin Branch Station, Moccasin, Mont., in 1933 are given in the following table:

Variety	C. I. no.	Yield (Bu. per A.)
Atlas	4118	22.9
Trebi	936	20.3
New Composite Cross	5461	19.0
Coast	690	19.3
Horn	926	18.1
Hannchen sel.	5462	14.9
Himalaya	620	14.9
(Unnamed)	3842	12.5
Hannchen	581	10.2
Composite Cross	4116	20.8 1/
Mechanical Mixture	4115	19.3 1/

1/ Single plot.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward)(Nov. 30) Moderate weather continued throughout November. The total precipitation was 0.39 of an inch. The season has been exceptionally dry and only a trace of snow has fallen in the mountains.

The winter-wheat nursery emerged November 28 but the stand is thin. Many of the commercial fields show very patchy growth where moisture was present, but the bulk of the winter wheat has not yet emerged.

The greater part of the work this month has been on the preparation of the third annual report for the cooperative work at this Station and moving and arranging stored grain to new storage facilities.